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FEDERAL ENVIRONMENTAL, INDUSTRIAL
AND NUCLEAR SUPERVISION SERVICE OF RUSSIA

ORDER No. 671
of November 30, 2011
On APPROVAL OF FEDERAL CODES AND REGULATIONS IN THE FIELD OF ATOMIC ENERGY USE "REQUIREMENTS FOR EMERGENCY POWER SYSTEMS OF NUCLEAR POWER PLANTS"

Pursuant to Article 6 of the Federal Law of November 21, 1995, No. 170-FZ "On Use of Atomic Energy" (Code of laws of the Russian Federation, 1995, No. 48, article 4552; 1997, No. 7, article 808; 2001, No. 29, article 2949; 2002, No. 1, article 2; No. 13, article 1180; 2003, No. 46, article 4436; 2004, No. 35, article 3607; 2006, No. 52, article 5498; 2007, No. 7, article 834; No. 49, article 6079; 2008, No. 29, article 3418; No. 30, article 3616; 2009, No. 1, article 17; No. 52, article 6450; 2011, No. 29, article 4281; No. 30, article 4590; No. 30, article 4596; No. 45, article 6333; No. 48, article 6732), item 5.2.2.1 of Provisions on the Federal Environmental, Industrial and Nuclear Supervision Service of Russia of July 30 2004, No. 401 (Code of laws of the Russian Federation 2004, No. 32, article 3348; 2006, No. 5, article 544; No. 23, article 2527; No. 52, article 5587; 2008, No. 22, article 2581; No. 46, article 5337; 2009, No. 6, article 738; No. 33, article 4081; No. 49, article 5976; 2010, No. 9, article 960; No. 26, article 3350; No. 38, article 4835; 2011, No. 6, article 888; No. 14, article 1935; No. 41, article 5750), the following order is issued:

1. To approve the attached federal codes and regulations in the field of atomic energy use entitled as "Requirements for Emergency Power Systems of Nuclear Power Plants" (NP-087-11).

2. The issued order shall come into effect since coming into effect of the resolution of the Government of the Russian Federation on introduction of respective changes into the

List of federal codes and regulations in the field of atomic energy use approved by the resolution of the Government of the Russian Federation of December 1, 1997, No. 1511 (Code of laws of the Russian Federation, 1997, No. 49, article 5600; 1999, No. 27, article 3380; 2000, No. 28, article 2981; 2002, No. 4, article 325; No. 44, article 4392; 2003, No. 40, article 3899; 2005, No. 23, article 2278; 2006, No. 50, article 5346; 2007, No. 14, article 1692; No. 46, article 5583; 2008, No. 15, article 1549).

Chairman

N. KUTIN

Approved by:
Order of the Federal
Environmental, Industrial
and Nuclear Supervision Service
of Wednesday, November 30, 2011, No. 671

FEDERAL CODES AND REGULATIONS IN THE FIELD OF USE OF ATOMIC ENERGY "REQUIREMENTS FOR EMERGENCY POWER SYSTEMS OF NUCLEAR POWER PLANTS" NP-087-11

I. Purpose and Scope of Application

1. The federal code and regulation in the field of atomic energy use entitled as "Requirements for emergency power systems of nuclear power plants" (hereinafter referred to as "the Regulation") has been written in accordance with Federal Law of November 21, 1995, No. 170-FZ "On Use of Atomic Energy" (Code of laws of the Russian Federation, 1995, No. 48, article 4552; 1997, No. 7, article 808; 2001, No. 29, article 2949; 2002, No. 1, article 2; No. 13, article 1180; 2003, No. 46, article 4436; 2004, No. 35, article 3607; 2006, No. 52, article 5498; 2007, No. 7, article 834; No. 49, article 6079; 2008, No. 29, article 3418; No. 30, article 3616; 2009, No. 1, article 17; No. 52, article 6450; 2011, No. 29, article 4281; No. 30, article 4590; No. 30, article 4596; No. 45, article 6333; No. 48, article 6732), resolution of the Government of the Russian Federation of December 1, 1997, No. 1511 "On approval of the Provisions on development and approval of federal codes and regulations in the field of atomic energy use and of the list of federal codes and regulations in the field of use of atomic energy" (Code of laws of the Russian Federation, 1997, No. 49, article 5600; 1999, No. 27, article 3380; 2000, No. 28, article 2981; 2002, No. 4, article 325; No. 44, article 4392; 2003, No. 40, article 3899; 2005, No. 23, article 2278; 2006, No. 50, article 5346; 2007, No. 14, article 1692; No. 46, article 5583; 2008, No. 15, article 1549).

2. This Regulation sets main requirements for emergency power systems (hereinafter referred to as EPS) of nuclear power plants (NPP) regarding them as supporting safety systems.

3. The requirements of this Regulation apply to EPSs of all designed, constructed and operated NPPs. The terms and definitions used in this Regulation are given in the Annex.

II. General Requirements

4. An NPP auxiliary power supply system shall provide for an EPS.

5. The EPS is a support safety system in terms of its designation and nature of its function.

6. The EPS is the support system designed for power supply of the safety system loads under all NPP operation modes, including accidents and power unit blackout.

7. When non-safety related loads are supplied, the EPS shall be capable to assure the required reliability of its safety functions as well as be able to undergo testing.

8. The EPS shall be comprised of self-contained power supplies, transformers, distribution and switching devices.

9. Each unit of a multi-unit power plant shall have its own independent EPS. The systems (elements) providing for EPS safety functions of one NPP unit shall be independent from the systems (elements) providing for EPS safety functions of other units.

10. NPP elements which depend on power supply to perform their safety functions under design accidents, shall pertain to EPS loads.

11. EPS boundaries are determined in the NPP design and shall be set at the input terminals of the switches of the EPS sections used for connection of the EPS with the auxiliary normal operation power supplies and at input terminals of EPS electric loads.

12. EPS comprises the following main elements:

Metalclad switchgears;

distribution power assemblies;

transformers;

standby diesel-generator stations;

storage batteries;

DC switchboards;

uninterrupted power supplies (including cut-off and switching devices);

tight inlets (tight electrical penetrations) for power and control cables;

cable products;

cable works and structures.

the EPS design may also include other elements.

13. The EPS equipment secondary circuits (circuits of control, signalization, monitoring, automation and relay protection) shall comply with the requirements of federal codes and regulations in the field of atomic energy use applied to systems important for safety.

14. The EPS shall be capable of performing its functions under occurrences including design accidents accompanied with power unit blackout.

15. For the EPS to be able to perform its functions, it shall include self-contained power supplies in the form of diesel generator power stations and storage batteries. Other self-contained power supplies may be used in the EPS provided that this is justified in the NPP Safety Analysis Report (SAR).

16. The EPS shall be composed of independent channels, the number of which shall be determined by the number of channels of safety systems that constitute EPS loads. The EPS channels shall be physically separated from each other; the assessment of sufficiency of ESP channels physical separation shall be justified in the design and presented in the SAR.

17. EPS loads which provide for the performance of EPS functions (for example, ventilation, cooling) shall get power supply from the same EPS channel whose performance they are providing for.

18. NPP elements providing for the performance of functions by one EPS channel, shall be independent from elements providing for the performance of functions by another EPS channel.

19. Control of the EPS components in the Main Control Room, Standby Control Room, local control panels shall be arranged so that the command control units providing actuation,

change-over, disconnection of the safety system channel components are located in the individual panels (rooms) for each channel.

20. The control of safety functions performed by the EPS shall be automatic (excluding operations on restoration of power supply from the working source). Manual control shall be justified (EPS reliability shall be demonstrated with consideration of possible human errors).

21. To identify states of the EPS components during all operation and accident conditions at the plant, presentation (display) of sufficient information shall be provided for in the Main Control Room, Standby Control Room and local control panels.

22. The volume and accuracy of the information registered by the EPS shall be sufficient for the subsequent restoration of the course of occurrences and actions of personnel.

23. Considered together with the reliability indicators of the safety systems supplied by the EPS, the reliability indicators of EPS functions shall be such as to provide for the SAR reliability requirements set for these safety systems. Each NPP unit SAR shall contain an analysis of failures of the EPS elements (including failures caused by human error during operation or maintenance) along with an assessment of the impact on the unit safety. Special attention shall be given to the analysis of common cause failures, including potential fires.

24. The EPS and its elements shall perform their functions under the impact of natural phenomena and man-caused events typical for the NPP site, as well as under heat, mechanical, chemical and other impacts of design basis accidents.

25. The EPS elements and emergency power supply channels shall undergo tests and checkups in order to verify the compliance with the design parameters during commissioning, after repair, and periodically throughout the entire service life of a nuclear power plant. Scope and frequency of tests and checkups shall be set in the NPP design. No test (checkup) shall impede the EPS from performing its functions in case there is a violation of normal operation during the test.

26. The NPP design shall set and justify the conditions of safe operation of the EPS (including the conditions for admissibility of the EPS separate inoperable elements and/or channels).

27. The NPP design shall determine the scope of the bench, calibration and repair equipment and diagnostic tools of the EPS.

28. The NPP design shall provide for the possibility of the EPS repair and maintenance. The scope and frequency of maintenance shall provide for operability and the required level of reliability of the EPS without compromising the NPP conditions of safe operation.

29. The EPS explosion and fire hazardous compartments of category A, B1-B3 according to the fire safety code, as well as the turbine halls of the Standby diesel-generator station, shall be equipped with automatic fire extinguishing systems.

30. The NPP design shall justify and the NPP SAR shall provide for the required period of operation of the EPS in the condition of power unit blackout, as well as the required period of self-contained operation of the EPS aimed at supply of first group loads in the condition of power unit blackout accompanied with failure of emergency self-contained power sources, i.e. the diesel generators.

31. The layout and reliability of the EPS and its elements, their operation and documentation are objectives of activities aimed at safety assurance.

III. Power Supply of the Second Group Loads

32. Each EPS channel shall provide for one or several sections for power supply of the second group loads.

33. The EPS sections of the highest nominal voltage shall connect to the working source (section of normal operation of the same nominal voltage) in such way as to provide a reliable cut-off from the working source in case of loss of power in the EPS sections, as well as in case of receiving a command to disconnect.

34. The EPS sections not pertaining to the highest nominal voltage sections but designated for power supply of the second group loads, shall connect to a separate step-down transformer, connected to a respective EPS section of the highest nominal voltage.

35. Backing-up the power supply of EPS sections (power assemblies) designated for power supply of the second group loads from ESP elements pertaining to another EPS channel is prohibited.

36. Backing-up the power supply of EPS sections (power assemblies) designated for power supply of the second group loads from normal operation power sources is prohibited.

37. In case of loss of power (deviation of voltage or frequency from design parameters) in the EPS section of the highest nominal voltage for a period of time exceeding the period of automatic load transfer (emergency power supply), the EPS section shall automatically disconnect from the normal operation power sources and connect to emergency self-contained power source, i.e. the diesel generator(s). Each EPS channel shall have its own diesel generator.

38. It is permitted to simultaneously apply diesel generators with different nominal voltage and to connect them with the EPS sections of respective voltage.

IV. Power Supply of the First Group Direct Current and Alternating Current Loads

39. As self-contained power sources for the first group DC loads, the storage batteries shall be used which operate in the continuous float charge mode, which together with float chargers and rechargers and distribution boards comprise the DC power units. The charging and recharging devices may be united into one single device.

40. Each EPS channel shall have one or several DC power units.

41. The continuous float charge or recharge of the storage batteries shall be performed through rectifying devices connected to the EPS sections designated for the power supply of the second group power loads During accelerated charge it is permitted to connect the storage battery to the system of normal operation power supply (for the period of such connection the ESP channel whose storage battery is being charged, is regarded as non-

operable; on completion of accelerated charge the electrical circuit shall be reliably disconnected from the normal operation power supply system).

42. The capacity of the recharging rectifier shall be sufficient to ensure serviceability of all the loads connected to this DC unit. The capacity of the charging rectifier shall be sufficient to transfer the battery from discharged to completely charged condition within the time specified in the design.

43. AC power supply of the first group loads shall be provided by the inverters mainly.

44. In case automatic quick-acting power back-up is provided for the first group AC loads within one EPS channel based on the inverter-network or inverter-inverter scheme, the speed of the automatic back-up shall ensure operability of the first group loads.

45. The parameters of the EPS inverters and EPS first group AC loads shall be mutually agreed in order to provide for an extended EPS life.

V. Layout Requirements

46. The EPS metalclad switchgears and power assemblies shall be located within free access area.

47. The EPS equipment shall be located and protected in such way that failure of one EPS channel equipment could not disable the equipment and control circuits pertaining to another EPS channel.

48. The EPS element pertaining to different channels shall be located in different compartments (different fire zones). The compartments of different EPS channels shall be separated from each other and from compartments not pertaining to the EPS.

The fencing and bearing constructions of the EPS channel compartment shall:

be made of nonflammable materials;

provide for confinement of fire within the boundaries of the fire zone during the designed time of complete free burnup of the fire load (without consideration of fire fighting features).

have a minimum of 1.5 hours of fire resistance level (not taking account the fire duration calculations).

The mentioned fire resistance levels of the civil structures shall be justified.

49. To decrease the duration of fire and reduce the temperature impact on the civil structures, lengthy cable works shall be separated into sections by fire stops.

50. Technical and organizational measures shall be taken to avoid unauthorized access to the premises where the EPS components are located. The EPS premises shall be arranged to be immediately accessible if necessary. Each fact of access into the EPS premises shall be recorded and documented.

VI. Cable System

51. The cables of each EPS channel shall be physically separated from the other channels so that common-cause failures (fire or other causes) in one channel do not extend to another one.

52. The EPS shall provide for special separation of high and low voltage cables, as well as for their interference immunity.

53. The EPS cables shall be fireproof, the boundaries of fire propagation shall be limited to the area of source of ignition, the mentioned cable lines shall have a minimum of 1.5 hours of fire resistance level.

54. Bearing structures of the EPS cable works and cable fencing of different EPS channels separating them from one another and from similar structures and normal operation devices shall be made of fireproof materials with fire resistance degree of minimum 1.5 hours.

55. In case of assembly of power cables not pertaining to the ESP via ESP cable works, such cables shall meet the same requirements as the ESP cables applied to the whole cable route. In this case, within the boundaries of an ESP channel such cables shall be assembled together with the ESP cables without separation, however in the compartments of other ESP

channels such cables shall be separated from other cables by fencing structures having fire resistance of at least 1.5 hours.

56. Fire partitions, doors, hatches dividing cable works of one EPS channel into sections shall be made providing for fire resistance minimum level of 0.75 h.

57. On the territory of the NPP the cables pertaining to different EPS channels shall be assembled in antiseismic tunnels or channels considering the requirements for physical separation of the EPS channels.

58. The adjacent cable works of different EPS channels shall not have doors between each other.

59. Doors and hatches in the EPS cable work, as well as fire retaining valves installed in the ventilation systems, shall have a fire resistance level not less than the fire resistance level of the civil constructions of such cable work.

60. Where cable channels, ducts, cables and wires pass through civil structures which have a designated fire resistance level, cable penetrations shall be provided for having fire resistance level not less that the level of the civil constructions.

61. Metal ducts and reinforced concrete no-go channels shall be provided (besides sealing the places where cables are laid through the walls and partitions) with fire retaining belts made of fireproof materials with minimal fire resistance level of 0.75 h. Fire retaining belts shall be installed every 30 m in the horizontal routes and every 20 m in the vertical routes, as well as in the route ends and in the places of cable routes' branches. The composition and the type of fire retaining sealing, materials and belts, and their width shall be justified in the NPP design.

62. Constructions of cable trays, ducts, and penetrations shall be able to withstand mechanical loads from cables and relevant valves with due consideration of possible mechanical, thermal and chemical impacts as a consequence of design basis accidents, as well as natural phenomena peculiar to the NPP location area.

63. Cable exit points on the boundaries of the reactor installation compartment shall pass through tight cable penetrations which shall comply with the requirements given in the documents regulating the layout and operation of the localizing safety systems.

64. Cables of different EPS channels shall not be installed in one compartment except for the following cases:

Main Control Room and Standby Control Room premises, control and protection systems rooms, and cable rooms located beneath them. At the same time measures shall be taken to exclude safety systems operability failures due to common cause failures and propagation of fire through cables into adjacent rooms.

sealed rooms of the reactor installation compartment and rooms, in which the process equipment is provided with electric actuator or control assigned to different safety systems' channels (for example, shut-off valves in pipelines, sensors, etc.); here, the measures mentioned in item 65 shall be taken to exclude damaging of cables of different EPS channels; transit installation of other EPS cables is prohibited in these premises.

65. The main cable routes of different EPS channels in the common room within the reactor installation compartment shall be laid in metal ducts. When laying the fire retaining cables, the ducts shall be covered along the outer surface with the flame-resistant coat with fire resistance degree of 1.5 h each. The sections of cables from the main route to the load shall be laid in the metal tubes or in flexible metal hoses; the large-section power cables shall be laid in metal ducts.

66. The EPS cables when passing near the oil tanks and oil stations (at a distance of up to 10 m) as well as in the places of possible mechanical damages shall be laid in metal ducts. The power cables shall be laid in steel tubes in the rooms specially designed for oil pumps.

67. When less than 1kV electric motors mounted on shock absorbers are connected to the supply network, and in cases when supply cables sections do not correspond to the load contact terminals, transfer ducts shall be provided with power clips installed near the electric motors, as well as cable jumpers with flexible cores, which shall comply with same requirements which are applied to power cables.

68. Cables resistant to sodium impact shall be used in the sodium circuit rooms of NPPs with fast reactors and sodium coolant.

69. Cables going out of storage battery room shall pass through tubes installed in the wall or special bushing insulators. Having laid the cables the tubes shall be sealed to prevent

gas flow. Cables running from storage battery to the DC board shall be laid outside the cable rooms. In case the mentioned cables cross cable rooms, the cables shall be laid on steel tubes.

70. The length of the cable from storage battery room to the B shall not exceed 50 m.

VII. Storage Batteries of Emergency Power Systems

71. The types of the EPS storage batteries shall be determined considering the conditions of their self-contained operation during power unit blackout accompanied with failure of emergency self-contained power sources - diesel generators, and according to the admissible level of voltage on buses at maximum inching load including total inverter load of the first group loads power network.

72. No protection devices shall be installed between the storage battery and the DC board incoming switch.

73. Under normal operation the EPS batteries shall be fully charged and operated in continuous recharge mode from rectifiers (each storage battery shall be recharged from a separate rectifier).

74. The loads not pertaining to safety systems shall not be connected to the EPS storage batteries (except for the emergency lighting).

75. The rooms containing EPS batteries classified as explosion and fire hazardous shall be ventilated to maintain safe level of concentration of explosion hazardous gases. The EPS shall provide power supply to the active elements of the ventilation system of rooms containing the EPS storage batteries.

VIII. Standby Diesel Generator Stations (SDGS) of Emergency Power Systems

76. The number and the type of the SDGS diesel generators in one EPS channel shall be determined based on the power required for start-up and operations of the EPS channel loads in case of occurrences including design accidents accompanied by power unit

blackout. The parameters of the EPS diesel generators shall correspond to the start-up loads and overloads within the permissible time interval, and to nominal loads.

77. When the SDGS is in the standby mode, the EPS sections (power assemblies) shall supply power to the SDGS auxiliary loads. Here, the SDGS loads of one EPS channel shall get power supply from the same EPS channel section (power assemblies).

78. To make the trial run of the EPS diesel generators at full load possible, a parallel operation with the power system shall be provided. Actuation to parallel operation shall be provided by means of precision manual synchronization.

79. The SDGS shall be located in a separate building of the first seismic category. The SDGS may also be located in the auxiliary building of the reactor island or other buildings of the first seismic category.

80. Diesel generators of each EPS channel shall be installed in an isolated cell and be equipped with self-contained systems of fuel, oil, cooling, start-up air, control, protection, signalization and other systems assuring their operation. Circuits and service lines of different EPS channels shall not be interconnected.

81. The diesel generator and elements of its process systems (for example, coolers, heaters, pumps, separators, filters, compressors, air collectors), as well as valves pertaining to these elements shall not be located in the same room with the fuel transfer equipment.

82. The SDGS shall be capable of operation without continuous presence of the personnel.

83. The SDGS shall provide for the continuous readiness of the diesel generators to start-up. The time from the moment of start-up command to the moment of readiness to receive loads shall not exceed the time justified in the design and presented in the NPP SAR.

84. The NPP design shall present the list of loads which automatically disconnect from the EPS sections (power assemblies) feeding them before the diesel generator connects to the EPS section.

85. The NPP design shall set the sequence of the diesel generator load acceleration. The EPS shall be capable to provide power supply to the loads in the gradual load increase

without deterioration of the network parameters (voltage, frequency) below the design limits both in the connection and disconnection of the maximum load.

86. The SDGS systems shall provide for the unattended operation of the diesel generator within the designed period of time.

87. The design shall provide the intervals and methods for testing of diesel-generator serviceability (actuation, loading, disconnection) when the power unit is operated or shut-down.

88. The design shall determine the priority of the safety functions to be performed by the SDGS over the actions of some internal process protections that put the SDGS out of operation. This requirement shall not apply to those SDGS protections whose failure to actuate can lead to negative impact of NPP safety.

89. The EPS normal power supply restoration (transfer from power supply from the SDGS to power supply from the normal operation source) shall be performed by the personnel channel by channel.

IX. Lighting

90. Power of the lighting equipment of main passages, corridors, stairs which are used for personnel passing and evacuation and which are located beyond the reactor installation compartment, safety system rooms and other rooms (in case the latter is duly justified) shall be supplied as follows:

working lighting - by lines from sections (power assemblies) of the EPS second group;

emergency lighting - by emergency lighting panel.

Power of each emergency lighting panel shall be supplied by sections (power assemblies) of the EPS second group and shall be automatically backed up by the EPS section of the same EPS channel first group.

91. The lighting equipment in the rooms located within the reactor installation containment shall be supplied as follows:

emergency lighting - by lines from the EPS sections (power assemblies);

working lighting - by lines from sections (power assemblies) of normal operation.

92. The Main Control Room and Standby Control Room working and emergency (alternating current) lighting shall be supplied by the second group of two different EPS channels.

93. The constantly switched-on MCR and SCR lamps shall be supplied by the DC boards of one of the EPS channels.

X. Requirements for Pre-commissioning Activities and Operation of the Emergency Power System

94. Prior to NPP physical start-up, the pre-commissioning activities at the EPS shall be finished, including the following activities:

self-contained adjustment of the sets of electrical equipment of the EPS channels;

individual tests of the EPS channels (including individual tests of diesel generators with the step startup automatics and design change-over of the loads);

complex trial run of the EPS with the design second group loads;

individual testing of the design first group loads while operating at standard load in the normal mode and in the modes related to possible power interruptions of the power unit auxiliaries, including loss of power at the power unit.

95. During the developing power stage complex tests of the EPS shall be performed in the following modes:

power unit blackout;

NPP unit unloading to the unit auxiliary loading or to minimal power level at which power operation of the unit is allowed;

turbogenerator disconnection from the grid (in case there is a turbogenerator in the NPP).

The last two types of testing are conducted at all stages of power development, including the rated one. The testing results are documented in the statements and reports.

96. The EPS shall be performed in accordance with the Process Regulation of the NPP unit, regulations for technical maintenance and repair, operating instructions.

97. During the EPS operation the following technical and organizational measures to maintain the EPS operability shall be taken:

regular personnel observations of the running equipment, monitoring its conditions using the standard diagnostics and measurement devices;

periodical examination using the special design-specific diagnostic systems;

regular trial run of the EPS equipment in modes closely imitating NPP occurrences, in case the safety requirements limit the possibilities of direct and complete tests;

preventive maintenance, recovery and other routine activities.

The intervals for control, examination, technical maintenance shall be set in the NPP design.

98. The equipment of the EPS different channels shall have distinctive marks or color schemes to decrease the probability of unintended switchings, technical maintenance, repair or tests on the wrong EPS channel.

Appendix
to the Requirements for Emergency Power Supply Systems
of Nuclear Power Plants
approved by order of the Federal
Environmental, Industrial
and Nuclear Supervision Service
of November 30, 2011, No. 671

TERMS AND DEFINITIONS

1. Power Unit blackout - loss of alternating current power supply from all normal operation power sources of the NPP unit (working and standby auxiliary transformers).

2. The Emergency Power System first group loads - alternating and direct current EPS loads which do not permit (according to the NPP safety assurance requirements) an interruption of power supply for a period of time longer than the time of operation of the automatic switching devices during the NPP normal operation, as well as during violations of normal operation including accidents and power unit blackout.

3. The Emergency Power System second group loads - alternating current EPS loads which permit an interruption in power supply during transfer to an emergency power source for the time of start-up of such source, but not exceeding the time required by NPP safety considerations.

4. The Emergency Power System sections of the highest nominal voltage - sections which have the highest designed nominal voltage among the EPS alternating current sections designated for power supply of the second group loads included into the given EPS channel.

5. Emergency Power System - support safety system comprised of a set of self-contained power sources, converting units, distributing and switching devices which supply power at all modes of the NPP unit (including accidents and power unit blackout).