ҚАЗАҚТЕЛЕКОМ

STANDARD OF KAZAKHTELECOM JSC

OCCUPATIONAL SAFETY AND HEALTH REGULATIONS FOR WORKING IN PREMISES WITH INSTALLED TELECOMMUNICATIONS EQUIPMENT

ST JSC 80429 – 1/034 – 2020

Contents

Preface

1 ACTUALLY APPROVED by the Department for the Development of Regulatory and Technical Documents of the Administration of the Academy of Infocommunication Technologies, a branch of Kazakhtelecom JSC

2 INTRODUCED by the Operations Department of Kazakhtelecom Central Office

3 APPROVED by Kazakhtelecom JSC Order No. 70 dated March 27, 2020

4 INTRODUCED INSTEAD "Regulations on occupational safety and health at telephone exchanges and telegraphs", approved by Order of Kazakhtelecom JSC from 11.12.2000 No. 298

OCCUPATIONAL SAFETY AND HEALTH REGULATIONS FOR WORKING IN PREMISES WITH INSTALLED TELECOMMUNICATIONS EQUIPMENT

1 Area of application

1.1 These Occupational Safety and Health Regulations (OSH) for working in premises with installed telecommunications equipment (hereinafter - the Regulations) contain the safety and health requirements to be met when working in process rooms, pressurised areas.

1.2 These Rules apply to existing, reconstructed and constructed, technological facilities, containment areas and are mandatory for Kazakhtelecom JSC's branches.

1.3 The Rules establish a unified system for organising work on occupational safety and health in the structural subdivisions of Kazakhtelecom JSC.

2 Terms and definitions

The following terms and definitions apply in this Standard:

2.1 **An automatic telephone station (ATS):** A telephone exchange that automatically establishes telephone connections and disconnections.

2.2 **Safe working conditions:** Conditions in which the levels of occupational exposure of employees do not exceed the established standards.

2.3 **Basic electrical safety equipment:** Electrical safety equipment whose insulation is designed to withstand the operating voltage of the installation and which can be used to touch live parts under voltage.

2.4 **Occupational Safety and Health:** System for providing the safety of life and health of employees during their work activities, including legal, socio-economic, organizational and technical, sanitary and epidemiological, therapeutic and preventive, rehabilitation and other measures and means.

2.5 **Hazardous industrial factor:** An industrial factor whose impact on the employee may lead to temporary or permanent disability (occupational injury or occupational disease) or death.

2.6 **Workplace:** A place where an employee is permanently or temporarily located during the performance of their work duties during the course of their employment.

3 Designations and abbreviations

JSC - Joint Stock Company;
OSH - Occupational Safety and Health;
EES - entry and exit switchgear;
PPE - personal protective equipment;
REI - Rules for Electrical Installation;
RK - Republic of Kazakhstan;
OSH Service - Occupational Safety and Health Service;
OSSS - occupational safety standards system;
SU - structural unit;
ET - engineering technician;
ETL - electricity transmission line;
ESF - electrostatic field;
PSU - power supply unit.

4 General regulations

4.1 The installation and operation of telecommunications equipment shall be conducted in accordance with the requirements of these Rules, the Rules for Operation of Consumers' Electrical Installations, and the Rules for Electrical Installations (REI).

4.2 On the basis of these Rules and current regulations on OSH, occupational safety instructions shall be prepared for employees by positions and for certain types of work, taking into account local conditions, equipment and specifics of production processes. These instructions shall not conflict with these Regulations.

4.3 OSH instructions are developed by heads of workshops, sites, laboratories, and departments of Kazakhtelecom JSC's affiliated branches.

4.4 The Occupational Safety and Health Service (OSH Service) in Kazakhtelecom JSC's affiliated branches shall exercise continuous control over the timely development, review and revision of instructions for employees, provide methodological assistance to developers, assist them in obtaining necessary standard instructions, documents of the Occupational Safety Standards System (OSSS), and other regulations on occupational safety.

4.5 The instructions shall be approved by the Technical Head (Director) of the branch after agreement with OSH Service. Revision of instructions for professions or types of work shall be conducted at least once every 3 years. If the working conditions of employees have not changed within 3

years, the instruction shall be extended for the next term with a record on the first page of the instruction (stamped "Revised", full name (if any) date and signature of the person responsible for the revision of the instruction).

4.6 The OSH work shall be conducted in accordance with these Regulations.

4.7 The following safety requirements shall be specified in the technological documentation (flow charts, work drafts):

- organisational measures to provide the safety of the work;
- technical measures to provide the safety of the work;
- the qualifications of the operators;
- the necessary protective equipment.

5 List of hazardous and harmful occupational factors

5.1 The following hazardous and harmful occupational factors are possible for production processes on telecommunications equipment:

- increased noise level in the workplace;
- hazardous voltage levels in an electrical circuit which may short-circuit through the body;
- exposure to laser radiation;
- working at height;
- lifting heavy objects;
- ingress of explosive gases through the shaft;
- falling objects from height;
- risk of fire;
- the smallest residues of optical fibres coming into contact with the employee's skin;
- high or low air temperature in the work area;
- high or low air humidity;
- increased levels of static electricity;
- elevated levels of electromagnetic radiation;
- increased level of electromagnetic field strength;
- insufficient lighting of the working area;
- sharp edges, burrs and roughness on the surfaces of tools and equipment;
- the workplace is located at a considerable height relative to the floor.

6 Liability for breach of the Rules

6.1 Persons violating OSH requirements shall be held liable in accordance with the applicable laws of the Republic of Kazakhstan.

6.2 Any employee who has discovered a violation of the requirements of these Regulations, noticed a malfunction of equipment or protective equipment, or insufficient protective equipment, shall immediately report this to his/her immediate head, and in his/her absence, to his/her head.

7 Vocational selection and training requirements for occupational safety and health

7.1 Persons aged 18 years and over are authorised to carry out maintenance, repair and installation work on telecommunications equipment:

- who have undergone a medical examination;
- trained in safe work practices;
- who have undergone a health inspection; who have passed a safety knowledge test;
- have electrical safety group of at least III;
- have the relevant qualification according to the qualification handbook.

7.2 The Branch Head approves the list of positions of ET, electricians who shall have the relevant electrical safety group.

7.3 Trainees from institutes, technical schools and vocational schools under the age of 18 shall be allowed to stay in an active electrical installation under the permanent supervision of a person from the electrical engineering personnel with an electrical safety group of at least III. It is prohibited to allow trainees under 18 years of age to work independently and assign them an electrical safety group III or higher.

7.4 The procedure, types of training and knowledge checks shall comply with the requirements of the standard "Rules for training, briefing and knowledge checks of Kazakhtelecom JSC employees on occupational safety and health" ST JSC 80429-1/009-2018.

7.5 The list of jobs and professions to be trained in, as well as the procedure, form, frequency and duration of training shall be established by Branch Heads in coordination with the trade union committee, based on the nature of the profession, type of work, specifics of production and working conditions, taking into account the industry-specific regulatory legal acts.

7.6 Occupational safety training shall be conducted in accordance with the Standard Occupational Safety and Health Training Programme.

7.7 For jobs with additional (increased) OSH requirements, employees of the Company's structural subdivisions (SU) undergo additional special occupational safety training taking into account these requirements.

8 Requirements for the knowledge test of the Rules

8.1 The examination board of the SU branch of the Company shall check the OSH knowledge of the employees of the SU branch of the Company. The composition of the examination commissions shall be approved by the First Head of the Branch Office of the Company, its number of members shall not be less than 3 persons.

8.2 The First Head of the branch of the Company is responsible for the preparation of examinations and the follow-up control over the organisation of examinations, while in the SU the heads of the SUs are responsible for the preparation of examinations. In case of their absence, the persons appointed by the order of the First Head of the branch of the Company. The examinations shall be held in accordance with the schedule approved by the order of the First Head of the Branch Office, which shall be sent to all members of the examination commissions one month before the start of the examinations. The date and place of the examinations shall be notified to the examinee at least 30 days in advance.

8.3 OSH knowledge testing is conducted in accordance with the Rules of training, coaching and knowledge testing of Kazakhtelecom JSC's employees on occupational safety and health.

9 Requirements for seconded personnel

9.1 The authorisation to work on telecommunication equipment for seconded personnel (seconded personnel includes personnel of organisations sent to work on telecommunication equipment who are not on their personnel) shall be conducted in accordance with the requirements for seconded persons specified in the Safety Regulations for Operation of Consumer Electrical Installations and these Regulations.

9.2 Seconded persons arriving to carry out work on telecommunications equipment shall have personal certificates in the prescribed form on occupational safety knowledge testing and electrical safety group assignment. Safety and health checks for seconded personnel shall be conducted at their permanent place of work.

9.3 In addition to the purpose of the assignment, the assigning organisation (branch) shall inform in writing the persons who may be appointed as

responsible heads, workmen, heads and team members, as well as the persons who may be authorised to issue work orders when working in electrical installations.

9.4 The persons on assignment shall be instructed in OSH upon their first arrival at the assignment site (in the unit responsible for the area), taking into account the characteristics of the equipment on which they are to work, while those charged with the duties of: ordering, responsible heads, work producers and heads shall also be instructed in the electrical supply diagrams of this equipment.

9.5 It shall be the responsibility of the unit head responsible for OSH to organise and carry out the briefing as well as to carry out the authorisation.

9.6 The briefing shall be recorded in the briefing log and signed by the instructed and the person conducting the briefing. Third-party organizations and/or third-party employees (contractors), in accordance with the Rules for carrying out works in hazardous conditions, shall be issued an admission certificate for carrying out works by orders - permits of Kazakhtelecom JSC.

9.7 The commanding organisation is responsible:

– for the suitability of the seconded personnel with the electrical safety groups assigned to them;

– compliance with the rights granted to seconded personnel in accordance with Clause 10.3 of these Regulations;

– Compliance of the seconded personnel with the safety rules for the operation of electrical installations of consumers.

9.8 The organisation on whose equipment the seconded personnel work is conducted shall be responsible for implementing safety measures to protect employees from electric shock and other hazards present on the equipment in question.

9.9 In all cases, the operating personnel of the operating organisation is responsible for preparing the workplace and permitting the seconded personnel to work.

10 Work and rest mode

10.1 Work schedules shall be drawn up for employees working in shifts as well as for employees whose working hours are accounted for in periods.

10.2 Work schedules approved by the Branch Head after consultation with the trade union committee shall be communicated to the employees at least one month in advance and posted in a conspicuous place.

In exceptional cases of industrial necessity, work schedules may be changed throughout the reference period in consultation with the trade union committee. The continuous duration of work in a shift is set at 8 hours, not including a break for rest and meals.

10.3 To provide optimum performance and maintain health, scheduled breaks shall be set throughout the work shift, the length of which depends on the length of the shift, the type and category of work activity. Regulated breaks are included in the total working time.

11 Requirements for production facilities

11.1 The production premises of all existing, as well as newly constructed and reconstructed hermetic zones, technological premises (crosses, mines, rectifiers, batteries, rooms for diesel generators, etc.) shall comply with the requirements of existing building codes and regulations, departmental standards of technological design, departmental building codes, REI, Rules of operation of electrical installations of consumers, Safety regulations during operation electrical installations of consumers, fire safety rules in the Republic of Kazakhstan, Requirements for technological premises and buildings of Kazakhtelecom JSC when placing technological telecommunication equipment and these Rules.

11.2 The load-bearing capacity of the floor structure shall be 1225kg/m² at the top and 245kg/m² at the bottom. The room shall be selected on the basis of occupational safety requirements.

11.3 Video surveillance devices shall be installed in the containment area. Internal video cameras shall be mounted on the walls, at least 2.5 m high, or on the ceiling and connected to an uninterrupted power supply.

11.4 The number of cameras required shall be due to the absence of unviewable areas.

11.5 The frequency of saving copies of the video monitoring data shall be set to once a week.

11.6 Real-time video camera feeds shall be displayed on the screens of on-duty personnel to provide 24/7 monitoring.

11.7 The containment area shall be equipped with a security alarm system with the output of the intrusion detector to the site security post. Access to the containment area shall be with an authorised badge and the doors shall be fitted with opening sensors.

11.8 The building where the technology room, the containment area is to be located shall be at least II degree of fire resistance.

11.9 The relative humidity in the containment room shall be within the limits specified in the specifications. It shall be measured with a

psychrometer and shall be determined from the table as the ratio between the dry and wet thermometer readings present on the instrument.

11.10 A leakage and flood protection system equipped with automatic shut-off valves on the water supply risers shall be installed above the process room, hermetic zone, above the floor. The leakage protection system closes the valves by means of servo drives on the signal from the flood sensors. The leakage protection system shall be connected to an uninterruptible power supply. The emergency signal shall be output to the duty personnel panel.

11.11 Flood detectors shall be installed in process rooms, containment areas with active equipment.

11.12 There shall be loading and unloading platforms equipped with security alarms and video surveillance in the building to accommodate the process rooms, containment areas.

11.13 The dimensions of the door openings of the main entrance shall be taken into account the overall dimensions of the process equipment and the conditions of evacuation of people, within the range of 1.2 m to 1.5 m in width and not less than 2.13 m in height.

11.14 The strength of the load lifting structure shall guarantee that the maximum load can be lifted and that all safety regulations are observed.

11.15 Where heavy loads are handled intensively, increased nominal bearing capacity of raised floors or additional foundation supports shall be provided.

11.16 If technically possible, the containment area may be equipped with a raised floor at least 700 mm high.

11.17 Clean floors in the containment area shall be located on a non-combustible base (slag concrete, expanded clay aggregate concrete, etc.). The floors shall be level, easy to clean with a hoover and allow damp cleaning.

11.18 The following dust protection measures shall be provided in the premises:

– doors shall be metal and sealed;
– walls and ceilings shall have smooth surfaces with a dust- and pollution-free coating that can be systematically cleaned of dust.

11.19 Wall cladding shall be made of metal decorative panels, with a layer of heat insulating, non-combustible material with a density of 100-150 kg/m3 with a vapour barrier film. The walls shall be painted with non-dusting acrylic latex or water emulsion paint. The colour of the walls of the technological rooms (single containment area) shall be light-coloured, which will increase the overall illumination.

11.20 The enclosing structures of the production rooms shall have the required sound insulation. Estimated noise characteristics from

technological, electrical, sanitary and technical equipment as well as external noises (in cities, towns) are determined in each specific case during draft development.

11.21 The surface of walls and ceilings shall be smooth, made of materials that do not emit dust and that permit systematic dust cleaning.

11.22 To provide maximum visibility, all displays relating to the operation of switchgear equipment shall be designed for a room illumination level of 800 lux. In addition, an emergency lighting system shall be provided in process rooms, containment areas.

11.23 Process rooms (including pressurised areas) shall be separated from other rooms by non-combustible walls and partitions with a fire resistance rating of at least 1 hour.

11.24 Similar walls and partitions shall separate the technology room from the rest of the premises when it is located in an administrative or public building. Entrances shall be separate.

11.25 It is not allowed to lay transit pipelines of water supply, sewerage, heat supply through technological rooms, containment areas where telecommunication equipment is installed, as well as over these rooms.

11.26 The walls and ceilings of the containment area and technical infrastructure shall be provided with the necessary openings for cable ducts along cable routing routes in accordance with the design.

11.27 All cable penetrations through ceilings, walls and partition walls shall be made in sections of non-combustible (non-combustible) pipes using non-combustible materials. The points of penetration through walls and ceilings shall be sealed with compounds that prevent the spread of fire and smoke.

11.28 The containment room shall be free of windows and heating systems.

11.29 Equipment cubicles/racking shall be installed in parallel rows with the required distances from walls and adjacent rows.

11.30 Large and heavy loads shall be brought into or out of the containment area and infrastructure room by means of appropriately sized openings in the walls.

11.31 It is forbidden to locate the equipment and to carry out its installation and adjustment in rooms where construction work is incomplete.

11.32 In terms of the risk of electric shock to persons, a distinction is made:

a) hazardous premises characterised by the presence of one of the following conditions that create an increased hazard:
   - Dampness (relative humidity greater than 75%) or conductive dust;
   - Conductive floors (metal, earth, reinforced concrete, brick, etc.);
   - High temperature permanently or periodically (more than 1 day) above +35 °C;

- Possibility of simultaneous human contact with metal building structures, technological devices, mechanisms, etc. and with metal housings of electrical equipment, on the one side and on the other side;

b) particularly hazardous premises characterised by the presence of one of the following conditions which create a particular hazard:
   - particular dampness (relative humidity of the air is close to 100% - the ceiling, walls, floor and objects in the room are covered with moisture);
   - a chemically active or organic environment (permanently or for a long time, aggressive vapours, gases, liquids, deposits or moulds are present, destroying the insulation and live parts of the equipment);
   - two or more hazardous conditions are present at the same time;

c) premises without increased hazard, in which there are no conditions posing increased or special hazard.

11.33 The Technical Head of the organisation shall classify the premises according to electrical safety and issue a Company order.

11.34 At the entrance to all pressurised areas and technical infrastructures, signs shall be posted indicating the category of rooms of electrical shock hazard, explosion and fire safety and safety signs, full name and position of the person responsible for the state of occupational safety.

11.35 Containment areas shall be equipped with ventilation and air conditioning systems.

11.36 To provide the efficient operation of air conditioning systems and to maintain the required temperature conditions, equipment in cabinets and rows shall be located with consideration given to the creation of 'cold' and 'hot' corridors.

11.37 The interfloor ceilings above the battery room, acid room, electrolyte room and vestibules to them shall be gas-tight.

11.38 220 V socket outlets shall have a third grounding contact.

11.39 The walls of the containment area shall be thermally insulated with non-combustible materials.

11.40 Earthing arrangements shall be constructed in the production areas to provide the safety of persons and protection of equipment and operating conditions.

11.41 Grounded feeder feeders isolated from the metalwork shall be laid in the containment area.

11.42 For the grounding of telecommunication process equipment enclosures, protective ground wiring not isolated from metal structures shall be laid.

11.43 The protective earthing wiring shall be made with steel busbars: on the main section up to the rows of equipment with a minimum size of 4x25 mm, and along the rows with a minimum size of 3x20 mm.

11.44 It is not permissible to lay the earthing bar along the rows of process equipment, but to branch out to the rows from the main bus with a copper flexible wire of at least 6 mm cross section. In this case the connections of the row staves shall be made in a loop and without breaking the earthing conductor.

11.45 Each earthing switch shall comply with REI requirements and have a certificate that contains a diagram of earthing switch, main technical data as well as data on examination of earthing switch status, nature of repairs made and changes made to the design of the switch.

11.46 The connection of neutral protective earth conductors to earthing switches, earthing circuits and earthing structures shall be made by welding, and to equipment enclosures by welding or reliable bolted connection.

11.47 Each piece of equipment to be earthed or grounded shall be connected to the earthing or grounding network with a separate conductor. No part of the equipment to be earthed or neutralised shall be connected in series to the earthing or neutral protection conductor.

11.48 Earthing and neutral protection conductors shall have a coating that protects against corrosion.

11.49 Openly laid steel earthing conductors shall be painted black.

11.50 The laying of neutral protective earth conductors at wall and floor penetrations shall normally be conducted with direct termination. In these places the conductors shall not have any connections or branches.

11.51 Identification signs shall be provided at the points of entry of earthing conductors into buildings.

11.52 Measurement of the earthing resistance according to the "Measurement of copper cables" data sheet shall be conducted twice a year, normally during the periods of lowest ground conductivity: in summer, when the ground is drying out, and in winter, when the ground is frozen through.

11.53 The production premises shall be stocked with the necessary amount of dielectric protective equipment. Special cabinets, shelves, racks, etc. shall be used for their storage.

11.54 An anti-static wrist strap shall always be used when personnel are working with the equipment to prevent damage to sensitive electronic components from electrostatic discharges. One end of the wrist strap is attached to the ground and the other end is wrapped around the wrist. The anti-static wristband uses a resistor with a resistance of 1 megohm to dissipate the charge if the wire touches a charged object.

11.55 Employees shall be provided with sanitary-hygienic premises in accordance with the standard "Regulation of sanitary-hygienic premises for employees of Kazakhtelecom's JSC branches".

11.56 First aid kits shall be located in visible places in the premises. A list of medicines and supplies contained in the first aid kit shall be attached to the first aid kit.

11.57 Technical rooms shall be cleaned by a specially instructed cleaning employee (cleaner).

12 Requirements for production equipment

12.1 Production equipment installed in process rooms, containment areas according to OSH shall comply with the requirements of equipment specifications, requirements of industry standards and enterprise standards for individual groups and types of equipment.

12.2 All telecommunication equipment of the node shall be located on a single site (containment area).

12.3 All equipment, including equipment of foreign companies, shall have a certificate of compliance containing safety requirements, issued depending on the type of equipment.

12.4 Elements of the structure of the production equipment (static, rack-mounted, switchgear etc.) shall not have sharp corners, edges or surfaces with irregularities which constitute a source of hazard. If there are sharp corners, they shall be fenced off or covered with corners (overlays).

12.5 Current-carrying parts of equipment accessible to accidental contact and carrying voltages of 42 V for high-hazard rooms and no more than 12 V for high-hazard rooms shall be covered or fenced.

12.6 All covers and covers of equipment covering contacts with alternating voltages in excess of 42V shall be marked with an electrical voltage symbol.

12.7 Units and parts of equipment, which are sources of hazardous radiation, harmful vapors, which pose a hazard to personnel (for example, units containing a laser generator, units with remote power supply, etc.), shall have safety signs or signal coloring in accordance with the requirements of GOST 12.4.026.

12.8 Disused or obsolete products containing mercury (fluorescent lamps, etc.), lead (battery plates, etc.), electrolytes, manifestants, fuels and lubricants shall be disposed of.

12.9 Environmentally hazardous substances shall not be disposed of on site.

12.10 Fluorescent lamps to be disposed of shall be stored packed in a separate room.

12.11 Metal parts of equipment which may be electrically live above 42 V due to insulation damage shall be earthed (grounded).

12.12 The body of the stationary equipment shall have a special bolt (screw, stud) for its grounding or grounding and a grounding sign. The bolt shall

be placed in a visible and safe place which is easy to connect the conductor and accessible for inspection.

12.13 The connection of earthing and neutral protection conductors to parts of the equipment to be earthed or grounded shall be made by welding or bolted connection. For a bolted connection, measures shall be taken to prevent loosening and corrosion of the contact connection.

12.14 Transition resistance value between earthing bolt (screw, stud) and each non-conducting metal part of the product accessible to touch, which can be live, shall not exceed 0,1 Ohm.

12.15 In production rooms there shall be rubber dielectric mats of at least 0.7 m width and length equal to the length of the equipment (EES) in front of the equipment racks with voltage exceeding 42 V.

12.16 During thunderstorms, it is forbidden to work on the EESs of communication cables.

12.17 When working on EESs or other energised equipment, tools with insulating handles shall be used.

12.18 It is recommended to equip technological rooms, containment areas in accordance with the requirements of the Fire Safety Rules of the Republic of Kazakhstan with carbon dioxide fire extinguishers taking into account the maximum permissible concentration of fire-extinguishing agent.

12.19 In the event of a fire, the power supply and exhaust ventilation system shall first be switched off.

12.20 When protecting rooms with telecommunications equipment, the interaction of extinguishing agents with the equipment, products, materials, etc. to be protected shall be taken into account.

13 Requirements for the layout of production equipment and the organisation of workplaces

13.1 Placement and installation of equipment shall be in accordance with departmental process design codes, departmental building codes.

13.2 Requirements for production rooms and placement of equipment with sources of electromagnetic radiation shall comply with regulations.

13.3 Maximum permissible levels of electrostatic field strength (ESF), measures to protect against ESF exposure and requirements for monitoring compliance with ESF levels at workplaces shall comply with norms of permissible electrostatic field strength at workplaces.

13.4 The workplace shall meet the requirements of regulatory legal and technical regulations on occupational safety and health. Optimal solutions for workplace arrangement shall be made on the basis of specific conditions of production process, taking into account design features of equipment, specific features of its maintenance and repair.

13.5 The content of harmful substances in the working area air of production premises shall not exceed the maximum permissible concentrations (Order No. 168 of the Minister of National Economy of RK dated 28 February 2015 "On Approval of Hygienic Standards for Atmospheric Air in Urban and Rural Residential Areas").

13.6 Upon detection of levels of exposure to harmful and/or hazardous production factors above permissible levels, the employer shall immediately take measures to eliminate the causes of the hazard.

13.7 Workplace lighting shall be provided for all rooms of buildings, as well as areas of open spaces intended for work, passers-by. Separate lighting control shall be provided for areas with different conditions of natural lighting and different modes of operation. If necessary, part of the working or emergency lighting fixtures can be used for standby lighting.

13.8When organising the workplace, provide that all the elements that make up the workplace (seats, controls, information display, etc.) are rationally arranged.

14 Requirements for the use of protective equipment

14.1 Employees performing work on telecommunications equipment shall be provided with special clothing, special footwear and other personal protective equipment in accordance with Article 182 (2) (4) of the Republic of Kazakhstan Labor Code.

14.2 The employer shall provide employees with special clothing, special footwear and PPE at their own expense in accordance with the standards approved by Order No. 943 of the Minister of Health and Social Development of the Republic of Kazakhstan dated 8 December 2015.

14.3 Special clothing, footwear and PPE of employees of Kazakhtelecom JSC shall be provided in accordance with the norms approved by the Collective Agreement (Annex No. 8 "Norms of providing employees of Kazakhtelecom JSC with special clothing, footwear and other personal protective equipment at the expense of the Employer

14.4 Heads of affiliated branches are responsible for timely regulation of employees with special footwear, overall and other personal protective equipment.

14.5 Special clothing, footwear and other personal protective equipment (PPE) issued to employees shall be appropriate to the nature and conditions of work and provide work safety.

14.6 The Branch Head shall provide specially equipped rooms (dressing rooms) or lockers for storage of special clothing, special footwear and other personal protective equipment (PPE) issued to the employees.

14.7 The Branch Head shall provide that the employees use the special shoes, overall and other personal protective equipment (PPE) issued to them during their work.
14.8 Employees operating telecommunications equipment shall be trained in the use of protective equipment and shall use it to provide safe working conditions.
14.9 Faulty or non-electrically and mechanically tested protective equipment shall not be used.
14.10 Employees shall treat with care the special clothing, special footwear and other personal protective equipment issued to them for use.
14.11 The accounting, storage, norms and timing of operational electrical tests of protective equipment are given in Annex A.

15 Safety and health requirements for cross-country work

15.1 The employee shall use personal protective equipment correctly during work.
15.2 Sharp corners of the crossbar frame shall be rounded or covered with corners to avoid bruises and cuts to the service personnel.
15.3 The EES frames to which the low and high frequency pairs of cables with DPs are soldered shall be painted on both sides with red paint.
15.4 Dielectric mats shall be laid in front of equipment racks which have over 42V voltage.
15.5 When carrying out crossings, measurements or other work on EES switchgear, first check with a voltmeter or voltage indicator that there is no extraneous voltage.
15.6 Work shall only be conducted from properly marked ladders with an inventory number and a date stamp for the next test. Before climbing on the ladder, check its stability. Ladders higher than 1.3 m shall be equipped with a support.
15.7 Movable stepladders with upper roller slides, used when working in double decker crossways, shall be secured with a locking device.
15.8 No unsecured objects shall be left on the ladders and no objects shall be thrown down.
15.9 The portable power tools used (soldering iron, electric lamp) shall be tested and have an inventory number, checked systematically and in good time, and repaired.
15.10 When inspecting power tools and appliances externally, attention shall be paid to the integrity of the wiring insulation and the absence of exposed live parts.

15.11 Lights with 60V voltage and not more than 42V voltage shall be used provided that the body of the light is made of insulating material and has a protective shield.

15.12 Soldering irons not exceeding 42V shall be used for soldering. The soldering iron shall be disconnected from the mains during interruptions or power cuts.

15.13 During thunderstorms, carry out electrical measurements at equipment bushings using a disconnector (fibre gasket or plug made of insulating material).

15.14 The crossing personnel shall alert the electrician to the presence of extraneous voltage on the telephone line. After the fault has been repaired it is necessary to check that there is no extraneous voltage on the telephone lines with a voltage indicator.

15.15 Fuses in the crossover shall be replaced only after the telephone line wires have been eliminated from contact with the mains wires. It is not allowed to remove the disconnector disconnecting the telephone line from the station equipment before the fuses are replaced.

15.16 The input and output circuits of low frequency amplifiers shall be separated in separate cables.

15.17 A note to this effect shall be made on the cards of overhead lines which cross power lines.

16 Safety and health requirements for working in a pressurised area

16.1 Persons with electrical safety group III or higher are allowed to maintain the equipment of the city, district and cities of regional subordination stations.

16.2 Maintenance and repair of the telecommunication equipment shall be conducted in accordance with the operational documentation for the used equipment and these requirements.

16.3 Dielectric mats shall be placed in front of equipment racks that have voltage above 42 V, switchboards.

16.4 For switching in power supply circuits, insulating shackles shall be used.

16.5 EES pins exposed to DP voltage shall be enclosed in insulating tubes and the sockets shall be covered with protective insulating covers.

16.6 EES insulating covers shall be marked with electric voltage signs to warn operating personnel of the risk of electric shock.

16.7 Elimination of damages and current repairs of equipment using hazardous voltages shall be performed when the voltage is fully disconnected, observing the requirements of the Occupational Safety Rules for Working in Electrical Installations.

16.8 Work on equipment using hazardous voltage without voltage removal shall be allowed in exceptional cases by order of the responsible head by at least two persons with a record in the register of works on orders and instructions, observing the requirements of the rules on occupational safety while working in electrical installations.

16.9 Work may be conducted on power supply units (boards) of individual or group equipment when the voltage is partially switched off.

16.10 Removing or repositioning shackles in the remote power supply circuits shall be done wearing dielectric gloves, standing on a dielectric mat or standing with dielectric galoshes, boots.

16.11 Removing units (devices) from the stand and cleaning the contact field (workplace) of the unit shall be performed with the power off (individual fuse removed).

16.12 Fuses shall be installed and removed with the voltage disconnected.

16.13 In an emergency, it is permissible to replace fuses while the load is live but unloaded, using insulating pliers or wearing dielectric gloves or, if the fuse links are open, also wearing safety goggles.

16.14 Fuses shall be replaced with one hand.

16.15 The fuses and the voltage on the stays shall only be checked with a voltage indicator.

16.16 Cleaning of the equipment in operation shall be conducted using surface-active detergents. Brushes with insulated cages shall be used for cleaning.

16.17 When installing the panels from the mounting side of the staves, make sure that the panel is firmly seated in the groove and secured in place. Remove the panel with both hands, keeping it from falling.

16.18 When working on the ladders near the supply busbars, touching the supply busbars and other live parts is not allowed.

16.19 Servicing the units located in the upper parts of the stacks (racks) shall only be performed from the proper ladders, stepladders in accordance with the requirements of safety rules for working at heights.

16.20 Rules for use and testing of protective equipment used in electrical installations are given in Annex B.

17 Fibre optic transmission systems (FOTS)

17.1 The equipment and devices containing the laser generator shall comply with the requirements of GOST 12.1.040-83.

17.2 Employees operating the equipment containing the laser generator shall have an electrical safety group of at least III.

17.3 The laser generator casing shall have a laser hazard sign in accordance with GOST 12.4.026.

17.4 The laser generator shall be of the enclosed type.

17.5 The optical outputs of the units, if no optical cable is connected to them, shall be covered with blanking plugs when the equipment is in operation.

17.6 Units containing a laser generator shall only be installed or changed when the power is disconnected.

17.7 The laser class according to GOST 12.1.040-83 shall be indicated on the equipment (unit) where the laser generator is installed. Depending on the class, the procedure of its maintenance shall be determined.

17.8 It is forbidden for the operating personnel:

- visually observe the laser beam to avoid eye injury;
- to direct the laser beam towards the person.

18 Energy and Climate Engineering Centre (EaCEC)

18.1 The location, installation and operation of the equipment in the Power Supply Unit (PSU) shall comply with the requirements of the Electricity Installation Regulations (REI), the User Electrical Installation Regulations (UEIR), the Safety Regulations for the Operation of Consumer Electrical Installations (SF) and these Regulations.

18.1.1 For the installation of PSU equipment, battery room as well as the construction of the cable shaft, it is advisable to choose the rooms so that long sections of cables of all types are not formed.

18.2 The height of the rooms (to projecting building structures) shall be at least, mm:

– 3000 - for rectifier;
– 2800 - for battery and acid;
– 2300 - for distillation room;
– 2800 - for the electrical panel.

18.3 The layout of the electrical installation equipment shall allow for transport during installation or replacement without dismantling the rest of the equipment.

The distance between the faces of the main equipment of the PSU shall not be less than 1.2 metres.

18.4 Depending on the volume, duration and complexity of the work performed in the operating PSUs, the work can be conducted in the order of the current operation, according to the orders and by orders. The lists of these works shall be made by the person responsible for the electrical equipment and approved by the management of the Company.

19 Rectifier

19.1 The rectifying room shall be equipped with working and emergency lighting.

19.2 The microclimate of the rectifier rooms shall comply with the requirements of Section 14 of these Regulations.

19.3 The door from the rectifying room (generator room) shall open to the outside and have a self-locking lock that can be opened without a key from the inside of the room.

19.4 The passage between the face of the switchboard or rectifier and other equipment or the wall shall be at least 1.2 m. The passageways shall not contain any objects that could hinder the movement of people or equipment.

19.5 Dielectric mats shall be laid in front of battery boxes, rectifiers and switchboards of the same length as the length of the electrical installation.

20Battery packs

20.1 Stationary low-maintenance open-type acid batteries or sealed batteries shall be installed in rooms designated for them.

20.2 Stationary low-maintenance open-type acid or sealed batteries shall not be placed in the same room.

20.3 Batteries and battery chargers shall be operated by personnel trained in the operation of batteries and having an electrical safety group of at least III.

20.4 Personnel operating the battery system shall be provided with:

– instruments for monitoring the voltage of individual battery cells and the density and temperature of the electrolyte;
– special equipment;
– special clothing and protective equipment in accordance with the Standard Industry Norms.

20.5 No nylon aprons or other clothing capable of depositing static electricity shall be worn by personnel handling batteries to prevent the formation of static electricity.

20.6 Entrance to the battery room shall be through a vestibule. It is prohibited to make an entrance from the utility rooms. The tambour shall be of such dimensions that the door from the battery room to the tambour can be opened and closed when the door from the tambour to the adjacent room is closed; the area of the tambour shall not be less than 1.5 square metres.

20.7 The battery room shall have a separate ventilated room for the storage of acid, separators, electrolyte preparation supplies (acid room).

20.8 The doors of the vestibule, battery room and acid room shall open outwards and be fitted with self-locking locks allowing them to be opened without a key from the inside.

The doors shall carry the following inscriptions: "Battery room", "Fire risk, "Do not enter with fire", "No smoking" and indicate the lettering of the explosion risk category of the room.

20.9 A water tap and sink shall be installed near the battery room. The sign above the sink shall read: "Acid and electrolyte shall not be discharged.

20.10 The floors of the battery room shall be strictly horizontal, on a concrete base with an acid-resistant coating.

Racks on asphalt pavement shall be supported by a stable, acid-proof material. Racks shall not be placed directly on the asphalt pavement.

An acid-resistant skirting board shall be installed inside the battery and acid rooms and at the doors of these rooms.

20.11 Walls, ceilings, doors and window frames, ventilation ducts (exterior and interior), metal structures and other parts of the battery room shall be painted with acid resistant paint.

20.12 Portable closed-type batteries used to power stationary electrical installations, as well as open-type batteries up to 60V with a total capacity of not more than 72Ah can be installed both in a separate room with ventilation and in a general industrial non-explosive and non-fire hazardous room, in ventilated metal cabinets with air removal outside the room. Closed-type portable batteries operating in a discharging or continuously recharging mode, which are charged outside the place of installation, may be installed in metal cabinets with louvers without venting to the outdoors.

If these conditions are met, the explosion and fire hazard class of the premises is not changed.

20.13 Sealed stationary batteries which are charged at voltages not exceeding 2.3 V per cell may be installed in a common non-explosive and non-fire hazardous production room provided a ventilation hood is fitted over them. In this case the explosion and fire hazard class of the room is not changed.

20.14 The supply and exhaust ventilation of the battery room is switched on before the battery starts to charge and is switched off after venting no sooner than 1.5 hours after the end of the charge, and for continuous charging operation as required in accordance with local regulations.

In addition, natural exhaust ventilation shall be provided to ventilate the battery rooms, providing at least one air exchange per hour.

20.15 The vestibule accumulator room shall be provided with an air supply.

Regulation shall be made for the charging rectifier to be interlocked with the battery exhaust system and for it to switch off automatically when the fan is not running if the charging voltage exceeds 2.3 V per cell.

20.16 Exhaust openings shall allow for 1/3 of the exhaust air to be removed from the upper part of the room and 2/3 of the air from the lower part.

20.17 If the ceiling is projecting or sloping, air extraction shall be provided from each opening or from the top of the space below the ceiling, respectively.

The distance from the top edge of the top vents to the ceiling shall be no more than 150 mm and from the bottom edge of the bottom vents to the floor no more than 300 mm.

20.18 Ventilation ducts of accumulation rooms shall not be routed into chimneys or the general ventilation system of the building. They shall be 1.5 m above the roof base.

20.19 Rooms equipped with low-acid open batteries shall be ventilated to provide a maximum permissible concentration of sulphuric acid mist of 1 mg/m3 at the employee's breathing zone level.

20.20 Exhaust fans shall be of explosion-proof design.

20.21 Rooms with portable batteries operating only in discharge mode (i.e. if these batteries are recharged in another room) are not equipped with ventilation devices.

20.22 The air flow from the ventilation ducts shall not be directed directly at the electrolyte surface of the batteries.

Metal ventilation ducts shall not be placed over exposed batteries.

20.23 The battery room shall be equipped with working and emergency lighting with explosion-proof fittings. Lighting wiring shall be made with acid resistant sheathed wire.

20.24 Lighting fittings shall not be placed over batteries or busbars.

Switches, plug sockets and fuses shall be installed outside the battery room.

20.25 A portable sealed lamp with a safety net of no more than 12V or a battery torch shall be used for battery inspection. The lamp cord shall be enclosed in a rubber hose.

– Accumulators shall be at least 0.75 m away from heaters of the low-acid open type.

20.26 It is recommended that the battery room shall be heated by means of a heater outside the battery room which supplies warm air through a ventilation duct. When electric heating is used, care shall be taken to prevent sparks being drawn in through the duct.

When steam or water heating is provided, it shall be conducted within the battery room with smooth pipes connected by welding. Flange connections and installation of valves is prohibited.

20.27 A washbasin shall be provided near the battery room containing soap, cotton wool, towels and 5% soda solution when operating acid batteries.

20.28 All vessels containing electrolyte, distilled water, soda solution, boric acid solution or acetic essence shall be clearly marked with the name of the contents.

20.29 Acid shall be stored in glass braided bottles, closed with rubber or lapped glass stoppers, or in polyethylene cans of special design with a tightly closed neck. Before lifting the acid bottle, make sure the bottom of the basket

(crate) is secure. Bottles or canisters shall be positioned in a single row on the floor. They shall be labelled with the name of the contents. If a battery is installed in a cabinet, a maximum of 1 litre of sulphuric acid may be stored in the cabinet. In this case the acid container shall be sealed tightly with an acid-resistant rubber stopper. Distilled water and all accessories necessary for preparing the electrolyte shall be stored in a special cabinet.

20.30 Glass bottles of acid or electrolyte shall be carried by two employees. The bottle with the basket shall be placed in a special wooden box or carried on a special stretcher with a hole in the middle and a crate, into which the bottle and the basket shall fit 2/3 of its height.

20.31 It is forbidden to carry a bottle with acid or electrolyte on hands or back.

20.32 When preparing the electrolyte the acid shall be poured slowly, stopping (in order to avoid intense heating of the electrolyte) in a thin stream from the mug into a porcelain or other heat-resistant vessel with distilled water. The electrolyte shall be stirred continuously with a glass rod or tube or an acid-proof plastic stirrer.

Do not prepare an electrolyte by pouring water into the acid.

20.33 Respirators shall be worn when working in the battery room when charging or moulding batteries.

20.34 Respirators shall be worn when dressing and stripping plates to avoid harmful effects on the body from lead deposits.

Brushing and ragging of sulphide from lead plates and straightening of lead plates can be done with local ventilation. Rubber gloves and safety goggles shall be worn when carrying out this work.

It is forbidden to touch lead plates with bare hands.

20.35 It is forbidden to store or take food or drinking water in the battery room.

20.36 At the end of work in the battery room, the face and hands shall be thoroughly washed with soap and water and the mouth shall be rinsed with water before each meal and smoke.

20.37 If it is necessary to carry out installation work in the battery room, a procedure shall be established before the start of work to record, store and give the installation personnel the keys to the battery room, the doors of which shall be locked at all times.

21 Small-scale power plants

21.1 Only trained personnel with electrical safety group III or higher shall be allowed to service power plant equipment.

21.2 The equipment of small power plants/shall be located taking into account the requirements of REI, UEIR, DNTD and the manufacturer's instructions.

21.3 The equipment shall be located so that individual units can be replaced without dismantling the rest of the equipment.

21.4 Manual connection of the standby small-scale power plant to the consumer's network (electrical consumers) is allowed only if there are interlocks between the switching devices that exclude the possibility of simultaneous voltage supply to the consumer's network and to the power supplying Company's network.

21.5 Prior to commissioning a small-scale power station which may be operated in parallel with the power supply network, an instruction sheet defining the mode of operation of the small-scale power station and the relationship between the parties in its use shall be developed and agreed with the power supply Company.

21.6 For each type of maintenance and repair of the small-scale power station, a time limit shall be defined, taking into account the manufacturer's documentation. An inspection of a standby plant shall be conducted at least once every 3 months.

Note - small power plants include stationary and mobile sources of electrical energy (diesel, petrol and other electrical installations) used as main and reserve sources of power supply to consumers' electrical receptors.

21.7 The use of lifting gear shall be provided for carrying heavy units when installing the equipment.

21.8 Motors and generators in the power plant machinery room shall be installed on foundations in accordance with the manufacturer's instructions or the design.

The housings of generators, power and automation panels shall be earthed in accordance with the Electrical Installations Regulations.

21.9 Dielectric mats shall be laid around generators, power and automation panels. The area of the carpets shall be such that the operating personnel shall be on the carpet when working on the equipment.

21.10 Switches, terminals and other current-carrying parts shall be covered with covers protecting against accidental contact with live parts.

21.11 During maintenance work on the equipment, a sign saying "Do not switch on! People are working".

Maintenance or repair work shall only be conducted when the machine is at a standstill and the starter and automation circuits have been disconnected.

21.12 All rotating parts of the engines and auxiliary machinery shall be guarded. The strength and dimensions of the barriers shall provide that accidents and incidents are prevented.

21.13 The power plant room shall be equipped with mechanical supply and exhaust ventilation. Ventilation shall be designed to remove excessive heat from

the machinery room. The air exchange shall be at least three times and the carbon monoxide content of the power plant room shall not exceed 20mg/m3.

21.14 The power plant room shall be equipped with a heating system to maintain the indoor temperature at least + 15° C during cold weather.

21.15 If the room is heated by furnaces, the furnaces shall not be located in the engine room.

21.16 The power plant room shall be equipped with working and emergency lighting.

In an emergency, the use of electric torches is allowed.

21.17 Light switches shall be fitted at the entrance to the power station premises.

21.18 Mufflers, exhaust pipes and other engine parts shall be sealed to prevent engine exhaust gases from entering the power station premises and provide that the gases are vented to the outside. The exhaust pipe shall be at least 1.5 m above the roof ridge of the building. The exhaust stack within the power station room shall be thermally insulated.

21.19 In the engine room, a maximum of one day of operation of the power plant unit is allowed to be stocked with fuel. Fuel shall be stored in closed and serviceable metal containers.

21.20 Fuel reserve for internal combustion engine shall be stored in a separate room from the engine room. The arrangement of the fuel storage and its location shall be approved by the fire-fighting authorities.

21.21 The fuel tank installed near the engine shall be filled with fuel before starting the engine or after the engine has stopped and cooled down.

21.22 It is forbidden to pour fuel into the tank when the engine is running.

21.23 Accidental spillage of fuel or lubricants on the floor or equipment shall be removed immediately.

21.24 Wiping materials shall be stored in closed metal boxes with a capacity not exceeding 0.5 m3.

21.25 For internal combustion engines installed on the premises, the use of leaded petrol is prohibited.

21.26 It is prohibited to enter the room where internal combustion engines are installed and the fuel storage room with an open flame.

21.27 The fuel depot shall be locked. Warning posters shall be posted on the doors: "Fire hazard", "Do not enter with fire".

21.28 The operators of the power station shall wear overalls and headgear during work.

21.29 The mobile power station (MPS) shall be installed away from wooden and storage buildings, in field conditions - from mows, stacks, crops at a distance of at least 10 m.

21.30 Smoking and lighting fires near the mobile power station or leaving it unattended during operation is prohibited.

21.31 Fuel shall be stored in a canister or metal canister. During darkness, fuel may only be refuelled by the light of an electric lantern.

21.32 In the event of ignition of liquid fuel or insulation on live parts of the power plants, do not extinguish the flames with water.

To extinguish the flames, use carbon dioxide fire extinguishers or a fire cloth.

In the event of an ignition, the engine shall be extinguished immediately.

21.33 Provide that no fuel or oil leaks under the powerpack. Immediately cover up any spilled petrol or oil with sand or earth.

21.34 If there are any signs of malfunctioning of the MPS (boiling water in the radiator, sparking brushes on the generator rings and exciter collector, etc.) the equipment shall be stopped to rectify the faults. To avoid accidental electric shock, it is forbidden to touch live parts of the generator during operation of the genset, as well as to make any repairs to the generator or switch over the wires.

21.35 Stationary and mobile gensets shall be fitted with protective equipment.

21.36 Wash your face and hands after handling fuels and lubricants.

22 Compressor, pumping and ventilation units. Internal and external pipework, and air pipelines

22.1 Allow persons with an electrical safety group III or higher to service the cooling units.

22.2 Compressor, pump, ventilation units and auxiliary devices shall be located so that the width of working passages to all valves, valves, gate valves, etc. is not less than 0,7 m.

22.3 Transmission from motors to compressors, pumps and fans as well as all exposed moving parts of the units shall be covered with metal guards which shall not be removed during unit operation. Rotating part covers are marked with arrows indicating the direction of rotation. Motor winding leads shall also be covered with covers.

In order to reduce noise, motors and fans shall be carefully regulated and installed on shock absorbers; air pipes shall be treated with sound-absorbing materials; connections between fan outlets and air pipes shall be made with canvas or rubber spigots. Fans and motors shall be placed in insulated chambers. Metal air pipes shall be earthed.

22.4 All open floor openings, passageways and bridges in compressor, fan and pump rooms shall be guarded by a handrail at least 1m high, a boarding element at least 0.15m high from the base of the guardrail and a middle intermediate element. Floors of platforms and steps of ladders shall be made of corrugated steel.

22.5 Open suction openings of centrifugal fans shall be enclosed with a metal mesh with mesh dimensions not exceeding 20x20 mm.

22.6 The electric motor starters of compressors, pumps and manually operated fans shall be covered with dielectric mats on the floor, and in wet rooms the floor shall be covered with insulating coverings.

22.7 Cleaning, wiping and repairing (including tightening bolts) of compressors, pumps and fans while on the move is prohibited. Lubrication of equipment parts while on the move is allowed only if devices are available to make this operation safe.

22.8 During cleaning and repair work on compressors, pumps and fans, the electric motors driving them shall be disconnected from the mains; pumps and compressors shall be disconnected from the system and depressurised. A pump with a backup pump installed and running in parallel shall only be repaired after measures have been taken to provide that the pump to be repaired is not running the turbine (suction and discharge gate valves shall be closed).

22.9 The pressure gauges shall be checked in accordance with the Regulations for the Construction and Safe Operation of Pressure Vessels.

22.10 Rags and rags shall be stored in the compressor and pump rooms in lockable iron boxes.

22.11 Valves and gate valves of piping and air lines shall be accessible from the floor of the room or from safe ladders and special platforms.

22.12 Wells, chambers, tunnels, etc. shall be illuminated with portable electric lamps with a voltage not exceeding 12 V or with rechargeable explosion-proof lanterns.

22.13 All work on pipelines and air lines shall only be conducted when the pressure is relieved and the pressure supply has been safely shut off by means of shut-off valves. On the handle of the shut-off valves a placard "Do not open! People are working".

It is forbidden to clean the air intake pipe of oil by burning it out.

22.14 Moving parts of the equipment and live parts in the vicinity of which work is being conducted shall be securely fenced off or disconnected.

22.15 During pressure testing of the system, no work shall be conducted on the pipework and no knocking on the pipework is permitted.

Annex A
(*compulsory*)
Logbook and contents of protective equipment
(recommended form)

(name of the protective equipment, type)

Inv. no.	Test date	Date of the next test	Date of periodic inspection	The result of the periodic inspection	Signature of the person who conducted the inspection	Location	Date of issue for individual use	Signature of the person who received PPE for individual use	Note
1	2	3	4	5	6	7	8	9	10

Note - If test reports are issued to third parties, the number of the report shall be indicated in the " Notes " column

Annex B
(*compulsory***)**
Rules for the application and testing of protective equipment used in electrical installations, technical requirements for them

A.1 Protective equipment used in electrical installations shall comply fully with the requirements of the relevant GOST and these Regulations.

The development of means of protection not specified in these Regulations shall be subject to the approval of the appropriate governmental authorities.

A.2 When operating electrical installations with voltages up to and above 1000 V, means of protection against electric shock (electrical protective equipment), against electric fields of increased intensity collective and individual, as well as personal protective equipment GOST 12.4.011 - 89 (ST CMEA 1086-88) System of Standards of Occupational Safety and Health. Means of protection of employees. General requirements and classification.

A.3 Electrical protection means include:

- all types of insulating rods (operating, measuring, earthing);
- Insulating and measuring pliers;
- Voltage indicators of all kinds and voltage classes (with gas-discharge lamp, non-contact, pulse type, incandescent lamp, etc.);

- non-contact voltage detectors;
- insulated tools;
- dielectric gloves, boots and galoshes, mats, insulating feet;
- safety barriers (shields, screens, insulating covers, hoods);
- portable earthing equipment;
- safety devices and appliances for testing and measuring electrical installations (voltage indicators to check phase alignment, cable puncture devices, transient voltage differential detection device, cable fault indicators, etc.)
- posters and safety signs;
- other protective equipment, insulating devices and devices for repair work under voltage in electrical installations of 110 kV and above and in power grids up to 1000 V (polymeric and flexible insulators; insulating ladders, ropes, inserts of telescopic towers and lifts; rods for carrying and equalising potential; flexible insulating covers and pads, etc.)

A.4 Electrical protective equipment is divided into basic and supplementary protective equipment.

The main electrical protective equipment in electrical installations with voltages above 1000 V include:

- Isolating rods of all kinds;
- Insulating and electro-measuring pliers;
- voltage indicators;
- devices and appliances for providing occupational safety during tests and measurements in electrical installations (voltage indicators to check phase alignment, cable puncture devices, cable fault indicators, etc.);
- other protective equipment, insulating devices and devices for repair work under voltage in electrical installations of 110 kV and above (polymer insulators, insulating ladders, etc.).

A.5 The main electrical protective equipment in electrical installations up to 1000 V includes

- isolating rods;
- insulating and electro-measuring pliers;
- voltage indicators;
- insulating gloves;
- insulated tools.

A.6 Additional electrical protection in electrical installations with voltages above 1,000V include:

- dielectric gloves;
- dielectric bots;
- dielectric carpets;
- insulating supports and pads;
- insulating caps;
- rods for carrying and equalizing the potential.

A.7 Additional electrical protective equipment for operation in electrical installations with a voltage of up to 1000 V includes:

- dielectric galoshes;
- dielectric carpets;
- insulating supports and pads;
- insulating caps.

3 Notes

1. All protective equipment shall be inspected before use, regardless of the timing of periodic inspections.
2. The availability and condition of protective equipment shall be checked by inspection periodically, but at least once every 6 months, by the person responsible for their condition, with the results of the inspection recorded in the log.
3. Dielectric carpets in operation are inspected 1 time in 6 months.