Conference Program

Monday, June 3

10:00 – 11:00 **Registration. Coffee break**

Lobby 1st floor

11:00 – 11:30 **Opening ceremony of the conference**

Conference hall

11:30 – 12:30 **Plenary Session**

Conference hall

Co-chairmen: A.V. Zhukov (SO UPS, Russia),
I. Patriota de Siqueira (CIGRE, SC B5, Brazil)

I. Patriota de Siqueira (CIGRE, SC B5, Brazil)
Research Committee of CIGRE B5 'Relay Protection and Automation: Purposes and Objectives'

G.S. Nudelman (CIGRE, EC B5, Russia)
Role of EC B5 CIGRE for Development of the Relay Protection and Automation System in Russia

A.V. Zhukov (SO UPS, Russia)
Prospects for Development of the Relay Protection and Automation in the UES of Russia

12:30 – 13:00 **Press conference**

13:00 – 14:00 **Lunch**

Lobby 1st floor

14:00 – 15:30 **Seminar of the Conseil International des Grands Réseaux Electriques CIGRE B5**

Conference hall

Chairman: I. Patriota de Siqueira (CIGRE, SC B5, Brazil)

I. Patriota de Siqueira (CIGRE, SC B5, Brazil)

J. M.Ordacgi F, Brazil (Brazilian CIGRÉ SC B5, Brazil)

15:30 – 16:00 ***Coffee break***

16:00 – 18:00 **Seminar of the Conseil International des Grands Réseaux Electriques CIGRE B5**

Conference hall

Chairman: I. Patriota de Siqueira (CIGRE, SC B5, Brazil)

A. Apostolov (Omicron Electronics, USA)

J. Zakonjšek (Relarte, Slovenia)

19:00 – 21:00 **Welcome Cocktail**

Lobby 1st floor

Tuesday, June 4

9:00 – 12:30 **Section 1.1: Advanced Relay Protection and Automation System. Establishment Ideology and Conceptual Development Issues**

Conference hall

Co-chairmen: G.S. Nudelman (VNIIR, Russia),
J. Zakonjšek (Relarte, Slovenia)

9:00 – 10:30

H. Guo, P. Crossley (The University of Manchester, U.K.)
S.1.1-1. Enhanced Characteristics of Multi-Zone Current Differential Protection for Transmission Networks

S.V. Ivanov, A.A. Belyanin, V.F. Lachugin (Bresler Research Center, Krzhizhanovsky ENIN)
S.1.1-2. Experience of the implementation of selective earth fault protection for 6-35 kV electricity network

N.A. Doni, K.N. Doni (NPP EKRA, Russia)
S.1.1-3. Peculiarities in application of digital negative sequence filters in power system protection equipment

O. Bagleybter (ALSTOM GRID, U.K.)
S.1.1-4. Implementation of a Current Transformer Model in SIMULINK® Based on the Hysteresis Theory of Giles-Eserton

V.K. Vanin, M.G. Popov, S.O. Popov (Saint Petersburg Polytechnic University, Russia)
S.1.1-5. Improvement of power transformer differential protection

V.I. Antonov, V.A. Naumov, A.M. Naumov, A.I. Fomin, A.V. Soldatov (NPP EKRA, Russia)
S.1.1-6. Structural analysis of Digital Relay Protection and Automation input signals

10:30 – 11:00 ***Coffee break***

11:00 – 12:30

E.A. Lir, N.V. Fomicheva (SO UPS, Russia)
S.1.1-7. Features of calculation and choice of settings of 220 kV lines relay protection and automation during the commissioning of reversible DC converters

S.L. Kuzhekov, A.A. Degtyarev, B.B. Serbinovsky
(South Russian State Polytechnic University, NPF KVAZAR, Russia)
S.1.1-8. On requirements to electromagnetic current transformers and to digital devices of protective relaying under conditions of transient electromagnetic processes

Z. Gajic, D. Trisic, S. Roxenborg (ABB SA Products, Sweden PD Drinsko-Limske HE, Serbia)
S.1.1-9. Rotor DC Current Measurement by Utilizing Current Transformer

V.V. Balashov, R.K. Borisov, Yu.P. Gusev (VNIIR, NPF ELNAP, National Research University Moscow Energy University, Russia)
S.1.1-10. Modern requirements to power system relay protection and automation DC power supply systems

A.V. Bulychev, D.S. Vasiliev, A.O. Pavlov (NPP Bresler, Russia)
S.1.1-11. Development of remote backup transformer protection methods in transmission lines with taping stations

Yu.Ya. Lyamets, G.S. Nudelman, Yu.V. Romanov, P.I. Voronov, M.V. Martynov, A.A. Belyanin (Bresler Research Center, VNIIR, Chuvashia State University, Russia)
S.1.1-12. Relay protection algorithms with free size information base

12:30 – 14:00 **Lunch**

Lobby 1st floor

14:00 – 18:00 **Section 1.2: Advanced Relay Protection and Automatics System. Establishment Ideology and Conceptual Development Issues**

Conference hall

Co-chairmen: V.S. Vorobiev (SO UPS, Russia), H.-J. Herrmann (Siemens AG, Germany)

14:00 – 15:30

Z. Gajic, T. Bengtsson, H. Johansson, J. Menezes, S. Roxenborg, M. Sehlstedt (ABB SA Products, Sweden)
S.1.2-1. Innovative Injection-based 100% Stator Earth-Fault Protection

V.V. Troitsky, A.E. Cheremushkin, A.S. Kushulinsky (Moscow Branch of Southern ITsE, Russia)
S.1.2-2. A few words about relay protection and automation design expertise on Russian united power system units.

E.N. Kolobrodov, G.S. Nudelman (VNIIR, Russia)
S.1.2-3. The increase of efficiency for relay protection of lines with TCSC

S.A. Vdovin, A.S. Shalimov (NPP Select, Russia)
S.1.2-4. Application of the distance protection for shunt reactors of 110 kV controlled by magnetic bias

A.N. Sadovnikov (South Urals State University (National Research University, Russia)
S.1.2-5. Centralized relay protection and automation in distribution network with small-scale generation

V.I. Nagai, I.V. Nagai, A.V. Ukraintsev, P.S. Kireev, S.V. Sarry (South Russian State Technical University, Russia)
S.1.2-6. Correction of the backup protection signals with transient resistance of the electrical arc

15:30 – 16:00 ***Coffee break***

16:00 – 18:00

K.P.A.N. Pathirana, A.D. Rajapakse, R. Washal (University of Manitoba, Canada)
S.1.2-7. Improved travelling wave based fault location in VSC HVDC Cables using Rogowski coil measurements

V.D. Lebedev, G.A. Filatova, A.E. Nesterikhin (Ivanovo State Energy University, Russia)
S.1.2-8. Measuring converters for relay protection and automation digital devices

Tuesday, June 4

09:00 – 12:30 **Section 2.1: WAMPAC Application Experience and Development Issues**

Maxim hall

Co-chairmen: A.V. Zhukov (SO UPS, Russia)
J.M.Ordacgi F (Brazilian CIGRE, SC B5, Brazil)

09:00 – 10:30

J.M. Ordacgi F (Brazilian CIGRE, SC B5, Brazil)
S.2.1-1. Technological Synchronism. Opportunities for Improvements in Protection, Automation and Control in Brazil

C. Wells (OsiSOFT, USA)
S.2.1-2. Continuum view of Power Grids using angle distance

A.V. Zhukov, E.I. Satsuk, D.M. Dubinin (SO UPS, Russia)
S.2.1-3. Development of Wide Area Measurement System technology in the UPS of Russia

L.-F. Santos, G. Antonova, M. Larsson (ABB SA Systems, Sweden, ABB Corporate Research, Canada)
S.2.1-4. The Use of Synchrophazors for Wide Area Monitoring of Electrical Power Grid

F.N. Gaidamakin, D.N. Toporkov, A.V. Danilin, D.M. Dubinin (AlteroPower, SO UPS, Russia)
S.2.1-5. Actual Trends in Development of Power System Protection and Automation

D. Dolezilek (Schweitzer Engineering Laboratories, USA)
S.2.1-6. Modem Digital Communications Dramatically Improve Wide-Area Telecontrol and Teleprotection

10:30 – 11:00 ***Coffee break***

11:00 – 12:30

M.Yu. Molvinskikh, A.S. Berdin, F.N. Gaidamakin, D.M. Dubinin (Prosoft-Systems, Urals Federal University, SO UPS, AlteroPower, Russia)
S.2.1-7. WAMS of «Surgutskaya GRES-2». Issues and prospects

A.V. Mokeev, D.N. Ulianov, V.N. Bovykin, A.V. Miklashevich (EnergoService, Russia)
S.2.1-8. Phasor Measurement Unit with support for IEEE C37.118 and IEC 61850

A.S. Berdin, M.Yu. Molvinskikh, A.S. Cherepov, P.V. Murzin (Urals Federal University, Prosoft-Systems, Russia)
S.2.1-9. Developing Measurements Hardware and Software for Power Plants Transients Monitoring

M.A. Balabin, N.B. Lavrushenko, R.I. Naumkin (Branch of Scientific and Research Center of FGC UES – SibNIIE, Russia)
S.2.1-10. Modern Test Bed for PMU Testing

K. Martin (Electric Power Group, USA)
S.2.1-11. Timetagging and Delays in Phasor Measurement Systems

A. Didbaridze, D. Dolezilek, F. Calero, D. Rodas (Schweitzer Engineering Laboratories, USA)
S.2.1-12. Large and Small Communications-Assisted Special Protection and Control Schemes: A Primer

12:30 – 14:00 **Lunch**

Lobby 1st floor

14:00 – 18:00 **Section 2.2: WAMPAC Application Experience and Development Issues**

Conference hall

Co-chairmen: A.S. Berdin (NTC UES, Russia),
D. Dolezilek (Schweitzer Engineering Laboratories, USA)

14:00 – 15:30

M. Larsson, G. Antonova, Luis-Fabiano Santos (ABB Corporate Research, ABB, Sweden ABB SA Systems, Canada)
S.2.2-1. Monitoring and Control of Power System Oscillations using FACTS/HVDC and Wide-area Phasor Measurements

A.F. Diachkov, A.V. Zhukov, A.I. Rasshcheplyaev, T.G. Klimova (SO UPS, National Research University Moscow Energy University, Russia)
S.2.2-2. Prediction and analysis of emergency events in UPS of Russia with use synchronized vector measurements

P.V. Chusovitin, A.V. Pazderin (Urals Federal University, Russia)
S.2.2-3. Identification of low-frequency oscillations in a complex power system on the basis of WAMS

J.V. Espinoza, A. Guzmán, F. Calero, M.V. Mynam, E. Palma (AMM- Guatemala, Schweitzer Engineering Laboratories, USA)
S.2.2-4. Real-Time Modal Analysis Scheme Maintains Central America's Power System Stability

A.V. Zhukov, Yu.P. Zakharov, O.L. Opalev, A.V. Yudin, P.Yu. Kovalenko (SO UPS, Urals Federal University, Russia)
S.2.2-5. The Modal Analysis of Power System Low Frequency Oscillations

D.V. Sorokin (SevZap NTC, Russia)
S.2.2-6. Centralized system of damping low frequency oscillations in power systems based on the WAMS (WAMPAC) systems

15:30 – 16:00 ***Coffee break***

16:00 – 18:00

J. Cárdenas (GE Digital Energy, Spain)
S.2.2-7. SmartGrid. What is really behind this word?

A.S. Berdin, P.Yu. Kovalenko, A.S. Gerasimov, Yu.P. Zakharov, N.G. Shubin
(Urals Federal University, SO UPS, NTC UES, RTSoft, Russia)
S.2.2-8. The Investigation Methods of Low Frequency Oscillations Non-linear and Non-stationary Characteristics in Power Energy System

I.A. Telgaev (Novintekh, Russia)
S.2.2-9. Creation of a Synchronized Vector Measurement System in Smart Clusters of UES East Synchrophasor systems implementation in intellectual clusters of Eastern IPS

Wednesday, June 5

9:00 – 12:30 **Section 3.1: IEC 61850 Standard Implementation Experience and Implementation Problems**

Maxim hall

Co-chairmen: N.A. Doni (NPP EKRA, Russia)
J. Cárdenas (GE Digital Energy, Spain)

9:00 – 10:30

H.-J. Herrmann, G. Einsidler (Siemens AG, Germany)
S.3.1-1. Modern Design of Protection, Control Devices (IEDs) and Functions

T.G. Gorelik, P.V. Kabanov, O.V. Kirienko (UES Research Center, Russia)
S.3.1-2. Approaches to developing reliable structure of digital substation

Yu.L. Smirnov, N.M. Aleksandrov (NPP Dynamika, Russia)
S.3.1-3. Requirements for IEC 61850 testing equipment

M. Goraj, L. Zugazaga, A. Gallastegi (Arteche, Spain)
S.3.1-4. Digital Substation, Overview of Technology, Industry Trends and Standardization Efforts

A.G. Egorov, A.A. Shapeev, M.V. Nikandrov, A.S. Baev (TsUP CHEAZ, Russia)
S.3.1-5. SCADA program-technical complex testing area in the high information load conditions "Storm"

Yu.I. Morzhin, S.G. Popov, M.V. Vazyulin, Yu.V. Korzhetsky, M.D. Ilyin (Scientific and Research Center of FGC UES, Russia)
S.3.1-6. The stages of introduction of the technology of the Digital substation» on UNEG facilities

10:30 – 11:00 ***Coffee break***

11:30 – 12:30

A.M. Abdurakhmanov, A.O. Anoshin, A.V. Golovin (Scientific and Research Center of FGC UES, TEKVEL, Russia,)
S.3.1-7. Automation of Relay Protection and Automation Engineering Process in Accordance With IEC 61850

A.F. Diachkov, A.V. Zhukov, D.M. Steshenko, B.K. Maksimov, A.O. Anoshin (SO UPS, National Research Institute Moscow Energy Institute, TEKVEL, Russia)
S.3.1-8. Analysis of performance of the communication network for digital substation

N.V. Podshivalin, I.A. Kapustina, I.N. Nikolaev (Bresler Research Center, Russia)
S.3.1-9. Implementation issues of IEC 61850-9-2 in microprocessor protection

L.L. Orlov, K.A. Sergeev (RTSoft, Russia)
S.3.1-10. IEC 61850 implementation experience in 220-500 kV Substation automation

T.G. Gorelik, O.V. Kirienko (NTC UES, Russia)
S.3.1-11. Substation automation and control based on IEC 61850 design issues

X. Chen, P. Crossley (The University of Manchester, U.K.)
S.3.1-12. Study of Application of IEEE 1588 in Substation Time Synchronisation

12:30 – 14:00 **Lunch**

Lobby 1st floor

14:00 – 17:00 **Section 3.2: IEC 61850 Standard Implementation Experience and Implementation Problems**

Maxim hall

Co-chairmen: S.V. Ivanov (Bresler Research Center)
Z. Gajic (ABB AB, Sweden)

14:00 – 15:30

A.O. Anoshin, A.V. Golovin (TEKVEL, Russia)
S.3.2-1. Regulatory Support for Digital Substations

T.G. Gorelik, P.V. Kabanov, O.V. Kirienko (NTC UES, Russia)
S.3.2-2. IEC 61850 device testing using software and hardware testbench: Simulator IEC 61850 and RTDS

Alvaro T.A. Pereira, I. Patriota de Siqueira (Companhia Hidroeletrica do Sao Francisco – CHESF, Brazil)
S.3.2-3. Commissioning tests of IEC 61850 based substation automation systems

A.F. Dyakov, A.A. Voloshin, Ya.L. Artsishevsky (National Research University Moscow Energy University, Russia)
S.3.2-4. The possibility of using a centralized approach to the development of relay protection and automation for digital substations

I.N. Dorofeev, A.E. Serrato, A.V. Charkin (Laboratory of Smart Grids and Systems, Russia)
S.3.2-5. iSAS - Software based implementation of digital substation protection and control system

I.N. Nikolaev, A.N. Podshivalin (Bresler Research Center, Russia)
S.3.2-6. Practical Aspects Relating to the Operation of Relay Protection and Automation Devices Applying EIC 61850 Standard
E.A. Negodina (Prosoft-Systems, Russia)
S.3.2-7. Metrology issues for electricity smart metering systems and quality control based on devices with IEC 61850-9-2LE data input

15:30 – 16:00 ***Coffee break***

Wednesday, June 5

09:00 – 12:30 **Section 4.1: Emergency and Mode Control**

Conference hall

Co-chairmen: E.I. Satsuk (SO UPS, Russia)
A.A. Lisitsyn (SO UPS, Russia)

09:00 – 10:30

A.A. Lisitsyn, P.Ya. Katz, A.V. Zhukov, E.I. Satsuk (NTC UES, SO UPS, Russia)
S.4.1-1. The development of a universal algorithm (implementing choice of control actions based on small-signal and transient stability analysis) for the new generation of a centralized system protection scheme

A.K. Landman, A.E. Petrov, A.S. Vtorushin, E.Yu. Popova, S.G. Arzhannikov (Institute of Power System Automation, Russia)
S.4.1-2. Algorithmic support of centralized emergency control system and its development prospects.

K.A. Tokar, A.N. Andreev (South Urals State University (National Research University, Russia)
S.4.1-3. Applying the Methodology of Post-Emergency Mode Stability Assessment and Control Impact Assessment for Adaptive Algorithm of the Centralized Emergency Control Automation System

A.V. Pazderin, S.V. Yuferev (Urals Federal University, UralENIN, Russia)
S.4.1-4. The definition of control actions in the nodes in the output power system operation for beyond the limits of existence

K.I. Aprosin (Ural Federal University, Prosoft-Systems, Russia)
S.4.1-5. Transient behavior real time parallel calculation for power system automatics

A.M. Glazunova (L.A. Melentiev Institute of Power Systems, Russian Academy of Sciences, Russia)
S.4.1-6. Method of dynamic state estimation for solving the problems of dispatch control of electric power systems

10:30 – 11:00 ***Coffee break***

11:00 – 12:30

J. Zakonjšek, P. Forsit, C. Peters (EnLAB JSCC, Russia, RTDS Technologies, Canada)
S.4.1-7. Real time simulation based development and testing of modern power systems

E.N. Kolobrodov, A.A. Navolochny, O.A. Onisova, D.S. Rybin, Ravinder Venugopal, Vincent Lapointe (VNIIR, Russia; OPAL-RT, Canada)
S.4.1-8. Technologies of power system real-time digital simulation

A.S. Gusev, A.O. Sulaimanov, A.V. Prokhorov, M.V. Andreev (Tomsk National Research Polytechnic University, Russia)
S.4.1-9. Prospects for the Use of All-Mode Electricity System Real-Time Modeling Complex for Analyzing and Testing of Relay Protection and an Automation System in Specific Condition of its Operation

A. Grobovoy, A. Arestova, M. Khmelik, K. Shkurkina, V. Shipilov (Laboratory of Emergency Control Management in Power System, Novosibirsk State TEchnical University, Russia)
S.4.1-10. Power network test bed model for investigation of Smart Grid technologies

G.S. Nudelman, A.A. Navolochny, O.A. Onisova (VNIIR, Russia)
S.4.1-11. Research on operating conditions of power system with distributed generation

M.G. Popov, E.V. Zakharova (Saint Petersburg State Polytechnical University, Russia)
S.4.1-12. Stability studies of United Power Systems on the base of structural approach

12:30 – 14:00 **Lunch**

Lobby 1st floor

14:00 – 18:00 **Section 4.2: Emergency and Mode Control**

Conference hall

Co-chairmen: P.M. Erokhin (SO UPS, Russia)
A.V. Pazderin (Urals Federal University, Russia)

J. Cárdenas (GE Digital Energy, Spain)
S.4.2-1. Impact of Network Protection in the prevention of Major Events in the Power System

N.N. Lizalek, V.F. Tonyshev, A.S. Vtorushin, E.Yu. Popova, M.V. Petrushkov (Institute of Power System Automation, Novosibirsk State Academy of Water Transport, Russia)
S.4.2-2. Research of unstable relative motion energy architecture as a prerequisite for determining the structure of emergency management

A.S. Gerasimov, A.Kh. Esipovich, E.B. Sheskin, I.I. Shtefka, A.V. Zhukov, A.P. Negreev (NTC UES, SO UPS, Russia)
S.4.2-3. The results of integrated and operational testing of a system of power system controls' conditions monitoring

V.A. Diachkov, A.A. Kornov, A.A. Lisitsyn (SO UPS, NTC UES, Russia)
S.4.2-4. The development and implementation of an algorithm of selective operation of the automation of power station unloading in case of nearby faults in mesh power grid

A.V. Zhukov, A.S. Aleksandrov, V.G. Neuimin, D.M. Maksimenko (SO UPS, NTC UES, Russia)
S.4.2-5. The evolution of technological algorithm monitoring reserves of static stability with take into account actions of local emergency control automatics

V.G. Neuimin, E.V. Mashalov (NTC UES, Russia)
S.4.2-6. Optimal transient stability securing action assessment algorithm based on real-time data

15:30 – 16:00 ***Coffee break***

16:00 – 18:00 *V.S. Vorobiev, A.V. Zhukov, A.S. Doktorov (SO UPS, Russia)*
S.4.2-7. Requirements to power system relay protection and automation communications

A.G. Chirkov (Prosoft-Systems, Russia)
S.4.2-8. Issues of efficiency of applications of the power line communication channels for tele-protection and emergency automation
S.T. Ismailov, S.S. Trufakin, A.G. Fishov (Novosibirsk State Technical University,

Thursday, June 6

09:00 – 12:30 **Section 5: Issues of Control System Cyber Safety in the Electric Power Industry**

Conference hall

Co-chairmen: B.I. Mekhanoshin (SO UPS, Russia),
I. Patriota de Siqueira (CIGRE, SC B5, Brazil)

09:00 – 10:30

D. Dolezilek (Schweitzer Engineering Laboratories, USA)
S.5-1. In the news: recent security failures prompt review of secure computing practices

D. Dolezilek (Schweitzer Engineering Laboratories, USA)
S.5-2. First principles of ethernet design for teleprotection and automation

A.B. Osak, D.A. Panasetsky, E.Ya. Buzina (L.A. Melentiev Power System Institute, Russian Academy of Sciences, Russia)
S.5-3. Aspects of reliability and security in the design of digital substations

O.A. Fedorov, A.A. Nebera, P.V. Litvinov (RTSoft, Russia)
S.5-4. Comprehensive approach for power substation organization of supervisory control without a permanent presence of staff

Yu.V. Mashinsky (RTSoft, Russia)
S.5-5. Cybersecurity of terminal access to the IED information technology power systems substations

D.K. Holstein, C.W. Newton, T.W. Cease (CIGRE JWG B5-D2.46, USA)
S.5-6. Are protection and control engineers provisioned with the toolst need to combat vyber-initiated intrusions?

10:30 – 11:00 ***Coffee break***

11:00 – 12:30

A. Lukatsky (Cisco Systems, LLC)
S.5-7. Experience in implementing the cybersecurity requirements of NERC CIP in Russia

H.-J. Herrmann, G. Fleischer, J. Hauschild (Siemens AF AG, 50Hertz Transmission GmbH, Germany)
S.5-8. User experiences of remote data evaluation

A. Berthold-van der Molen,, A. Kukanov (Microsoft EMEA, USA, Microsoft RUS, Russia)
S.5-9. SERA as a complex approach to provide architecture of cyber-security based on international security standards into critical energy systems

A.H. Hamdon, A. Eshpeter (SUBNET Solutions, USA)
S.5-10. Complexities of IED Cyber Security

S.E. Romanov, V.A. Kharlamov (Unitel Engineering, Russia)
S.5-11. Process control channels. The versatility and safety

V.V. Bardakov (Digital Security, Russia)
S.5-12. Security issue of microcontrollers firmware used in ICS

G.S. Nudelman, A.A. Oganesyan, V.N Kharisov (VNIIR, VNIIR-Progress, Russia)
S.5-13. Vulnerabilities of global navigation satellite systems based synchronization

12:30 – 14:00 **Lunch**

Lobby 1st floor

14:00 – 15:30 **Round table: 'Issues of Control System Cyber Safety in the Electric Power Industry'**

Conference hall

Co-chairmen: B.I. Mekhanoshin, A.V. Zhukov (SO UPS, Russia)
G.S. Nudelman (CIGRE, SC B5, Russia),
I. Patriota de Siqueira (CIGRE, SC B5, Brazil)

15:30 – 16:00 ***Coffee break***

16:00 – 17:00 **Summarizing results of the conference**

Conference hall

19:00 – 21:00 **Official Dinner**

Lobby 1st floor

Thursday, June 6

09:00 – 12:30 **Poster section**

Lobby 2nd floor

R.N. Nikolaev (SO UPS, Russia)
S.P-1. Verification of electric equipment parameters with Wide Area Measurement System

D.V. Sorokin (SevZap NTC, Russia)
S.P-2. Methods of PMU placement for power system observability improving for the state estimation problems

A.A. Baletinskikh, A.L. Gorokhov, A.N. Shestiperov (URALENERGOSERVICE, Russia)
S.P-3. Hardware complex of the "TriTON". Experience of implementation

I.A. Kapustina, A.N. Podshivalin (Bresler Research Center, Russia)
S.P-4. Experience coming from the development of IEC 61850 compliant data structure for the TOP 300 series IEDs

N.P. Kopytov, T.N. Chernov (Tyazhpromelektromet, Russia)
S.P-5. Problems relating to the application and development of switch control automation implemented using two microprocessor terminals at 110-220 kV lines

N.N. Kurguzov, L.I. Kurguzova, M.N. Kurguzova (Pavlodar State University, TOO Electrotechnical Design Institute TELPRO)
S.P-6. On the question about back-up protection of a powerful AC motor from phase to phase short circuit

V.D. Lebedev, G.A. Filatova, V.A. Shuin (Ivanovo State Energy University, Russia)
S.P-7. Mathematical model of cable Zero-Phase sequence current transformer

O.A. Dobryagina, E.A. Murzina, V.A. Shuin (Ivanovo State Energy University, Russia)
S.P-8. Regarding selection of replacement chart for calculating transitional processes of earth short curcuits in 6-10 kV grids

A.V. Arzhannikov (NPP EnergoElectronika, Russia)
S.P-9. Small-size devices MICRON series for diagnostics relay protection

M.Ya. Kletsel (Tomsk National Research Polytechnic University)
S.P-10. Bases of creation of relay protection on magnetic contacts

D.E. Maruskin, K.I. Nikitin, D.S. Osipov, A.A. Plankov (Omsk State Technical University, Russia)
S.P-11. Determination of temporary starting parameters of the electric motor for adaptive blocking of its

V.A. Efremov, M.V. Martynov (Bresler Research Center, Russia)
S.P-12. Microprocessor-based phase-comparison protection "Bresler": new performance

A.N. Podshivalin (Bresler Research Center, Russia)
S.P-13. Real-time diagnostics of equipment in a digital substation environment using IEC 61850

A.N. Pokidyshev (PARMA, EnergoService, Russia)

S.P-14. Analysis of IEEE C37.118.1

A.N. Podshivalin, E.A. Kushnikov (Bresler Research Center, Russia)

S.P-15. Testing of microprocessor-based out-of-step protection with a digital real-time model

V.E. Glazyrin, E.E. Glazyrin, A.V. Nikitin, V.P. Yavorsky (Power System Automation Institute, Novosibirsk State Technical University, Russia)

S.P-16. Overvoltage protection. Technical solutions, structure and algorithm improvement

A.G. Smirnov (LLC «Promenergo», Russia)

S.P-17. Up-to-date requirements for the transmitting/receiving equipment of relay protection. Universal transceiver of relay protection "Liniya-R"

A.A. Zhereb, A.U. Bogatyrev (RZA-SYSTEMS, Russia)

S.P-18. New developments microprocessor based relay of protection: Features of characteristic, functionality, approaches to design.