

76th Annual Georgia Tech Protective Relaying Conference

May 3-5, 2023 - Georgia Tech Hotel and Conference Center, Atlanta, GA

Tuesday May 2, 2023	
4:30 - 6:30 PM EST	Registration - GT Hotel
5:00 - 9:00 PM EST	Vendor Exhibits Open

Wednesday May 3, 2023	
Session WA-0 Salon 1-2-3-4-5-6	Session Moderator: Murty Yalla , Beckwith Electric Backup: Steven Kunsman , Hitachi ABB Power Grids
7:00 AM EST	Registration
7:50 - 8:00 AM EST	<i>Conference Opening - Welcoming Remarks</i> Sakis Meliopoulos Professor, School of Electrical and Computer Engineering
8:00 - 8:35 AM EST WA-0-P1	<i>Capacitor Rack and Protection Design on Duke Energy Transmission Capacitors</i> Stephen Ladd , Ethan Haithcox , Taylor Raffield , Duke Energy
8:35 - 9:10 AM EST WA-0-P2	<i>Analysis of Multiple Misoperations in the Starkville, MS Area</i> Seth Barnes , Tim Condra , Tennessee Valley Authority
9:10 - 9:25 AM EST	Break

Wednesday May 3, 2023			
Session WA-1	Session Moderator: David Busot , Tampa Electric Company Backup: Mostafa Shamsuddin , Nashville Electric Service	Session WA-2	Session Moderator: Craig Wester , GE Grid Solutions Backup: Chris Jones , Southern Company
9:25 - 10:00 AM EST WA-1-P1	<i>Line Current Differential Protection in Systems With Inverter-Based Resources: Challenges and Solutions</i> Normann Fischer , Ritwik Chowdhury , Ryan McDaniel Schweitzer Engineering Laboratories, Inc.	9:25 - 10:00 AM EST WA-2-P1	<i>Modern Capacitor Bank Protection Methods</i> Daniel Ransom , Craig Wester , GE Grid Solutions Joseph Schaefer , Ryan Bowersox , Florida Power & Light
10:05 - 10:40 AM EST WA-1-P2	<i>Investigation of Transformer Lockout Event Caused by Breaker Failure Protection Misoperation</i> Ibukunoluwa Korede , Dominion Energy	10:05 - 10:40 AM EST WA-2-P2	<i>Cap Bank Hardening: Reacting to Reactive Power Misoperations</i> Rick Gamble , Tennessee Valley Authority Mat Garver , Beckwith Electric
10:45 - 11:20 AM EST WA-1-P3	<i>Transformer Ground Differential Element Behavior with CT Error and Analysis of a Misoperation Event</i> Joshua Hughes , Qualus LLC Akram Saad , University of Tennessee at Chattanooga Seth Barnes , Tim Condra , Tennessee Valley Authority	10:45 - 11:20 AM EST WA-2-P3	<i>Capacitor Bank Unbalance Protection Calculations and Sensitivity Analysis</i> Bogdan Kasztenny , Satish Samineni Kasztenny Schweitzer Engineering Laboratories, Inc.
11:25 - 12:00 PM EST WA-1-P4	<i>Analysis of the Misoperation of DCB Schemes for Transmission Line Protection at National Grid</i> Yujie-Irene Lu , Song Ji , Michael Gregg , National Grid	11:25 - 12:00 PM EST WA-2-P4	<i>American Electric Power's Experience with Protection System Misoperations and Improvements</i> Ross Stienecker , Manish Thakur , American Electric Power
12:00 - 1:15 PM EST	Lunch - On Your Own	12:00 - 1:15 PM EST	Lunch - On Your Own

Session WP-1	Session Moderator: Robert Frye , Tennessee Valley Authority Backup: Manish Patel , Southern Company	Session WP-2	Session Moderator: Philip VanSant , Dominion Energy Backup: Murty Yalla , Beckwith Electric Company
1:15 - 1:50 PM EST WP-1-P1	<i>Comparison of Processes for Testing, Commissioning and Maintenance Methods - Digital Versus Conventional Substations</i> Craig Wester , Daniel Ransom , GE Grid Solutions Eugenio Carnevali , OMICRON electronics Corp. USA	1:15 - 1:50 PM EST WP-2-P1	<i>Detecting and Locating Broken Conductor Faults on High-Voltage Lines to Prevent Autoreclosing Onto Permanent Fault</i> Kanchanrao Dase , Sajal Harmukh , Arunabha Chatterjee , Schweitzer Engineering Laboratories, Inc.
1:55 - 2:30 PM EST WP-1-P2	<i>Transmission Line Protection for Systems with High Penetration of IBR - What We Can Do Better</i> Alexander Apostolov , OMICRON electronics	1:55 - 2:30 PM EST WP-2-P2	<i>Line Protection Operate Time: Speed vs. Security and Power System Stability</i> Sinisa Zubic , Zoran Gajic , O.D. Naidu , Mike Kockott , Hitachi Energy
2:35 - 3:10 PM EST WP-1-P3	<i>Hidden Failure Detection via Centralized Substation Protection</i> Sakis Meliopoulos , George Cokkinides , Georgia Tech Ed Chen , Consolidated Edison	2:35 - 3:10 PM EST WP-2-P3	<i>Security Criterion for Distance Zone 1 Applications in High-SIR Systems With CCVTs</i> Bogdan Kasztenny , Ritwik Chowdhury , Schweitzer Engineering Laboratories, Inc.
3:10 - 3:40 PM EST	Break	3:10 - 3:40 PM EST	Break
3:40 - 4:15 PM EST WP-1-P4	<i>A Comparative Analysis of Distribution Line Falling Conductor Protection Methods</i> Daniel Ransom , Yujie Yin , Charles Adewole , Nathan Dunn , GE Grid Solutions Matthew Webster , Jesse Rorabaugh , Arturo Torres , Southern California Edison	3:40 - 4:15 PM EST WP-2-P4	<i>Its About Time: Considerations and Requirements for DSS and Line Current Differential Applications</i> Brian Smyth , Marcel Van Rensburg , Manodev Rajasekaran , Schweitzer Engineering Laboratories, Inc. Ed Chen , Consolidated Edison
4:20 - 4:55 PM EST WP-1-P5	<i>IEEE C37.230-2020, IEEE Guide for Protective Relay Applications to Distribution Lines - Summary Paper</i> Christopher Walker , Brian Boysen , IEEE Power System Relaying and Control Committee	4:20 - 4:55 PM EST WP-2-P5	<i>Getting the Lines Crossed: How a Three-Phase Series Fault Caused a Sequence of Relay Operations</i> Marcel Taberer , Ryan McDaniel , Jon Larson , Schweitzer Engineering Laboratories, Inc.
4:55 PM EST	Adjourn	4:55 PM EST	Adjourn

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Thursday May 4, 2023

Session TA-1	Session Moderator: Alex Apostolov , OMICRON electronics Backup: Stephen Ladd , Duke Energy
8:00 - 8:35 AM EST TA-1-P1	<i>Event Analysis of 4.16 kV Generator Differential Misoperation</i> JC Theron , GE Grid Solutions Joseph Idehen , Northwest Territories Power Corp
8:40 - 9:15 AM EST TA-1-P2	<i>A Call to Action: Say Yes to Restricted Earth Fault Protection</i> Swagata Das , Ariana Hargrave , Marcel Taberer Schweitzer Engineering Laboratories, Inc.
9:20 - 9:55 AM EST TA-1-P3	<i>Beyond the Nameplate: Transformer Compensation Revisited - New Applications, Greater Simplicity</i> Ariana Hargrave , Michael Thompson , John Hostetler Schweitzer Engineering Laboratories, Inc.
9:55 - 10:10 AM EST	Break
10:10 - 10:45 AM EST TA-1-P4	<i>A Tutorial on Developing Symmetrical Component Models of Phase Shifting Transformers</i> Ryan McMaster , POWER Engineers, Inc.
10:50 - 11:25 AM EST TA-1-P5	<i>Application of Standard 87T Differential Protection on Phase Shifting Transformers</i> Z Gajic , G. Neise , K. De La Porte , Mike Kockott , Hitachi Energy D. Seifert , J. Neuhaus , TenneT TSO GmbH Ed Chen , Consolidated Edison
11:40 - 12:30 PM EST	Conference Awards and Keynote Speaker Keynote Speech: TBD Mark Lauby , NERC
12:30 - 1:30 PM EST	Lunch - Main Dining Room - 1st Floor

Session TP-1	Session Moderator: Russell Patterson , Patterson Power Engineers Backup: Joe Schaefer , Florida Power & Light
1:30 - 2:05 PM EST TP-1-P1	<i>Optimized Distribution Protection & Control</i> Wayne Hartmann , Craig Wester , GE Grid Solutions
2:10 - 2:45 PM EST TP-1-P2	<i>Protection and Control Challenges of Low Voltage Networks with High Distributed Energy Resources Penetration</i> Zheyuan Cheng , Juergen Holbach , Eric Udren , Quanta Technology Matthew Reno , Michael Ropp , Sandia National Laboratories
2:45 - 3:15 PM EST	Break
3:15 - 3:50 PM EST TP-1-P3	<i>Improving Distribution System Reliability With High-Density Coordination and Automatic System Restoration</i> Cole Salo , Jeremy Blair , Gautham Ashokkumar , Schweitzer Engineering Laboratories, Inc. John Thorne , David Nahay , Alabama Power Company
3:55 - 4:30 PM EST TP-1-P4	<i>An Introduction to Completing NERC MOD Studies for Inverter-Based Resources</i> Srinath Balasubramanian , Dustin Schutz , Tony Limon , Chris Postma , POWER Engineers, Inc
4:35 - 5:10 PM EST TP-1-P5	<i>Optimization of Distance Protection Performance Used in Wind Farms Collection Networks</i> Alexander Tsylin , Orsted Zoran Gajic , Mike Kockott , Hitachi Energy
5:10 PM EST	Adjourn

Session TA-2	Session Moderator: Marion Cooper , POWER Engineers, Inc. Backup: Russell Patterson , Patterson Power Engineers
8:00 - 8:35 AM EST TA-2-P1	<i>Frequency Measurement in Protective Relays and Impact by Renewable Energy Resources</i> Tirath Bains , Venkatesh Chakrapani , Ilia Voloh , Terrence Smith GE Grid Solutions
8:40 - 9:15 AM EST TA-2-P2	<i>Grid-Parallel and Islanding Operation Challenges of a Large Battery Energy Storage System at Cape Cod</i> Ahmed Abd-Elkader , Fred Amuna , Rona Vo , Schweitzer Engineering Laboratories, Inc. Enmanuel Revi , George Wegh , Stewart Hollis , Eversource Energy
9:20 - 9:55 AM EST TA-2-P3	Frequency Tracking Function in Numerical Protection Devices - Applications and Benefits Alexandr Stinskiy , Evandro Oliveira , Siemens
9:55 - 10:10 AM EST	Break
10:10 - 10:45 AM EST TA-2-P4	<i>High-Speed Falling Conductor Protection for Electric Power Transmission Systems</i> Yijie Yin , Charles Adewole , Hasan Bayat , Nathan Dunn , GE Grid Solutions Matthew Webster , Jesse Rorabaugh , Arturo Torres , Southern California Edison
10:50 - 11:25 AM EST TA-2-P5	<i>A Guide for Applying PRC-019 to Synchronous Condensers</i> Caitlin Short , Christopher Stone , POWER Engineers, Inc.
11:40 - 12:30 PM EST	Conference Awards and Keynote Speaker Keynote Speech: TBD Mark Lauby , NERC
12:30 - 1:30 PM EST	Lunch - Main Dining Room - 1st Floor

Session TP-2	Session Moderator: Mike Collum , Schweitzer Engineering Laboratories, Inc. Backup: Timothy Black , Duke Energy
1:30 - 2:05 PM EST TP-2-P1	<i>Wide Area Protection Coordination Studies - Study Methodology, Benefits, and ConEd Experience</i> Majida Malki , Jorge Valez , Kevin Judd , David Hart , Quanta Technology LLC Hibourahima Camara , Consolidated Edison
2:10 - 2:45 PM EST TP-2-P2	<i>Evaluate Protection Setting Performance in Sensitivity Studies: Implementations and Case Studies</i> Xinyang Dong , Daixi Li , Quanta Technology Aaron Feathers , Pacific Gas & Electric Company Chris Bolton , Dan Dietmeyer , San Diego Gas & Electric Company
2:45 - 3:15 PM EST	Break
3:15 - 3:50 PM EST TP-2-P3	<i>Short-Circuit Updates in ConEdison's Power System Model: Methodology, Challenges, and Lessons Learned</i> Jorge Velez , Majida Malki , Jinrong Li , Quanta Technology LLC Hibourahima Camara , George Goddard , Consolidated Edison
3:55 - 4:30 PM EST TP-2-P4	<i>Automated Protection Engineering Process - From Standards and Simulation Studies to IED Configuration</i> Yujie Yin , Charles Adewole , Paul Uppal , Nathan Dunn , GE Grid Solutions Edward Wong , Arturo Torres , Southern California Edison
4:35 - 5:10 PM EST TP-2-P5	<i>Applying Dependable and Secure Protection With Quadrilateral Distance Element</i> Kanchanrao Dase , Armando Guzman , Steven Chase , Brian Smyth , Schweitzer Engineering Laboratories, Inc.
5:10 PM EST	Adjourn

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Friday May 5, 2023	
General Session FA	Session Moderator: Russ Evans , Dominion Energy South Carolina Backup: Alexandr Stinskiy , Siemens Industry
8:00 - 8:35 AM EST FA-P1	<i>A Fresh Look at Practical Shunt Reactor Protection</i> Ritwik Chowdhury , Normann Fischer , Schweitzer Engineering Laboratories, Inc. Douglas Taylor , Avista Utilities David Caverly , Trench Limited Ali Dehkordi , RTDS Technologies Inc.
8:35 - 9:10 AM EST FA-P2	<i>Case Study: Protection Challenges on Series-Compensated Lines at a Pumped Storage Facility</i> Bernard Matta , Ahmed Abd-Elkader , Jordan Bell , Schweitzer Engineering Laboratories, Inc. Richard Tuck , Daniel Ridenour , Hung-Ming Chou , Dominion Energy
9:10 - 9:45 AM EST FA-P3	<i>The Evolution of Sampled Values Communications and Its Impact on Protection in Digital Substations</i> Alexander Apostolov , OMICRON Electronics
9:45 - 10:00 AM EST	Break
10:00 - 10:35 AM EST FA-P4	<i>Point-to-Point Digital Secondary System Design for a Transmission Substation at Duke Energy: Challenges and Solutions</i> Arun Shrestha , Schweitzer Engineering Laboratories, Inc. Stephen Ladd , Ethan Haithcox , Duke Energy Kelby Perren , Robert Koch , Kaitlin Slattery , Matthew Weaver , Matthew Zahn , University of North Carolina at Charlotte
10:35 - 11:10 AM EST FA-P5	
11:10 - 12:40 PM EST FA-RWE	<i>Real World Experiences</i> Moderator: Andre Smit , Quanta / Backup: Stephen Ladd , Duke Energy This session provides a forum for short presentations on "real life" experiences. Presenters will share protection related events in areas of operations, lessons learned, best practices and/or information on unique events.
12:40 PM EST	Conference Ends