



2015 CIGRÉ CANADA CONFERENCE

The RBC Convention Centre Winnipeg • Winnipeg, Manitoba Canada
From August 31, 2015 to September 2, 2015

Preliminary Program

Schedule at a Glance	2
Workshops Monday, August 31 st	3
Conference Day 1 Tuesday, September 1 st	4
Regular Poster Session September 1 st	5
Student Poster Session September 1 st	6
Conference Day 2 Wednesday, September 2 nd	7

Agenda - CIGRE Canada Conference, August 31, September 1-2, 2015, Winnipeg Manitoba

Time		Monday, August 31, 2015	Room
07:00	19:00	Registration	Concourse (2 nd floor)
15:00	19:00	Speaker Ready Room	Cecil Richards Suite
08:00	09:30	WORKSHOP #1: C4 – Ferroresonance	Pan Am Room (2 nd Floor)
09:30	10:00	Coffee Break	
10:00	11:30	WORKSHOP #2: B2 – Overhead Conductor Motion Phenomena and Control Methods	
11:30	13:00	Lunch (provided)	2G (2 nd floor)
13:00	14:30	WORKSHOP #3: C4 – Applications of Phasor Measurement Units	Pan Am Room (2 nd Floor)
14:30	15:00	Coffee Break	
15:00	17:00	WORKSHOP #4: C4 – Subsynchronous Resonance: Analysis, Case Studies and Equipment Development	
17:00	18:00		
18:00	21:00	Welcome Reception	Concourse (2 nd floor)

Time		Tuesday, September 1, 2015		Room
06:30	19:00	Registration		Concourse (2 nd floor)
06:30	08:00	Breakfast		2G&2H
07:00	16:00	Speaker Ready Room		Cecil Richards
08:00	09:00	Opening Plenary		Theatre
09:00	09:30	Networking Break		2G&2H
09:30	09:45	HVDC & FACTS Session 1	Asset Management Session 1	Track 1: Theatre Track 2: Pan Am
09:45	10:00			
10:00	10:15			
10:15	10:30			
10:30	11:00	Networking Break		2G&2H
11:00	11:15	HVDC & FACTS Session 2	Asset Management Session 2	Track 1: Theatre Track 2: Pan Am
11:15	11:30			
11:30	11:45			
11:45	12:00			
12:00	13:15	Lunch		2G&2H
13:15	13:30	HVDC & FACTS Session 3	Asset Management Session 3	Track 1: Theatre Track 2: Pan Am
13:30	13:45			
13:45	14:00			
14:00	14:15			
14:15	14:45	Networking Break		2G&2H
14:45	15:00	Renewable Energy Session 1	Emerging Technology Session 1	Track 1: Theatre Track 2: Pan Am
15:00	15:15			
15:15	15:30			
15:30	15:45			
15:45	16:00	Networking Break		2G&2H
16:00	17:30	CIGRÉ PANEL #1 – Lessons Learned from Recent Renewable Integration Studies		Theatre
17:30	19:00	Poster Session & Cocktail Reception		2E, 2F & 2G
19:00	22:30	Conference Banquet		Banquet Room 5 (ground floor)

Time		Wednesday, September 2, 2015		Room
06:30	13:00	Registration		Concourse (2 nd floor)
06:30	08:00	Breakfast		2G&2H
07:00	13:00	Speaker Ready Room		Cecil Richards
08:00	09:00	CIGRÉ PANEL #2 – DIAMOND SPONSORS PLENARY		Theatre
09:00	09:30	Networking Break		2G&2H
09:30	09:45	HVDC & FACTS Session 4	Smart Grid Session 1	Track 1: Theatre Track 2: Pan Am
09:45	10:00			
10:00	10:15			
10:15	10:30			
10:30	11:00	Networking Break		2G&2H
11:00	11:15	Power System Modelling Session 1	Renewable Energy Session 2	Track 1: Theatre Track 2: Pan Am
11:15	11:30			
11:30	11:45			
11:45	12:00			
12:00	13:15	Lunch		2G&2H
13:15	13:30	Power System Modelling Session 2	Smart Grid Session 2	Track 1: Theatre Track 2: Pan Am
13:30	13:45			
13:45	14:00			
14:00	14:15			
14:15	14:45	Networking Break		2G&2H
14:45	15:00	Power System Modelling Session 3	Emerging Technology Session 2	Track 1: Theatre Track 2: Pan Am
15:00	15:15			
15:15	15:30			
15:30	15:45			
15:45	16:15	Closing Session and Prize Draws		Theatre

Exhibitor Trade Show Opening Hours (2E & 2F)
Tuesday 9:00 am-4:00 pm; 5:30-7:00 pm
Wednesday 9:00 am-3:45 pm

Agenda - CIGRE Canada Conference, August 31, September 1-2, 2015, Winnipeg, Manitoba

Time		Monday, August 31, 2015			Room
07:00	19:00	Registration			Concourse (2nd floor)
15:00	19:00	Speaker Ready Room			Cecil Richards Suite
		Workshop	Synopsis	Presenter	
08:00	09:30	WORKSHOP #1: C4 - Ferroresonance	The highlights from CIGRE WG C4-307 will be presented. Participants in the tutorial will learn about the differences between resonance and ferroresonance, topologies that are vulnerable, electromagnetic transient modeling considerations and mitigation options.	<ul style="list-style-type: none"> • David Jacobson Manitoba Hydro 	Pan Am Room (2 nd floor)
09:30	10:00	Break			
10:00	11:30	WORKSHOP #2: B2 – Overhead Conductor Motion Phenemona and Control Methods	Understanding the motion of overhead line conductors and how to control them is critical in helping a modern utility effectively manage their assets. The tutorial will cover Aeolian vibrations, subspan oscillations and galloping, their impact, with an emphasis on conductor fatigue, and how to counteract these effects.	<ul style="list-style-type: none"> • Pierre Van Dyke IREQ 	
11:30	13:00	Lunch (provided)			2G (2 nd floor)
13:00	14:30	WORKSHOP #3: C4 – Applications of Phasor Measurement Units	The synchrophasor applications discussed at the CIGRE WG C4-34 meetings will be presented. This will include successful industry implementations, well tested but not yet implemented applications, current research, and future directions.	<ul style="list-style-type: none"> • Athula Rajapaske University of Manitoba • Tony Weekes Manitoba Hydro 	Pan Am Room (2 nd floor)
14:30	15:00	Break			
15:00	17:00	WORKSHOP #4: C4 – Subsynchronous Resonance: Analysis, Case Studies and Equipment Development	Subsynchronous Interactions have become a hot topic recently as a result of wind turbines being connected near series compensated lines. This workshop will describe the analysis methods and mitigation alternatives currently being applied in this area, as well as describe recent micro-processor based equipment developments in the protection field to help detect and protect against the phenomenon.	<ul style="list-style-type: none"> • Andrew Isaacs Electronix • Chandana Karawita TransGrid Solutions • Darshana Muthumuni MHI • Krish Narendra ERL Phase 	
17:00	18:00				
18:00	21:00	Welcome Reception			Concourse

Agenda - CIGRE Canada Conference, August 31, September 1-2, 2015, Winnipeg, Manitoba

Time	Tuesday, September 1, 2015				Room
06:30 - 18:00	Registration				Concourse (2 nd Floor)
06:30 - 08:00	Breakfast				2G & 2H (2 nd Floor)
07:00 - 16:00	Speaker Ready Room				Cecil Richards Suite (2 nd Floor)
08:00 - 09:00	Opening Plenary (Keynote Speaker: Mark Lauby NERC)				Presentation Theatre (2 nd floor)
09:00 - 09:30	Networking Break				2G & 2H
	Parallel Technical Sessions - Track 1 (Presentation Theatre (2 nd floor))		Parallel Technical Sessions - Track 2 (Pan Am Room (2 nd floor))		
	HVDC & FACTS Session 1 - HVDC Integration Chair: Ani Gole University of Manitoba	Presenter	Asset Management Session 1 - New Methods Chair: Brent Jorowski Manitoba Hydro	Presenter	
09:30 - 09:45	565- Towards a European Network Code for HVDC Connections and Offshore Wind Integration	Sven Rüberg TenneT TSO GmbH	627 - Probabilistic Based Reliability Analysis for Transmission Systems - an Asset Management Decision Making Tool	Sameh Kodsí Teshmont Consultants	Track 1: Presentation Theatre Track 2: Pan Am Room
09:45 - 10:00	591 - Process for Investigation and Mitigation of SSTI between HVDC Systems and Turbine Generators in a Deregulated Market	Jason Hopkinson Alberta Electric System Operator	564 - Total System Reliability program for Underground Electrical Distribution	Wen Shu UtilX Corp	
10:00 - 10:15	641 - Incorporating two HVDC links into Alberta Power system operations	Steve Heidt Alberta Electric System Operator	639 - Long-Term Monitoring of Local Stress Changes in 67 km Installed OPGW Cable Using BOTDA	Lufan Zou Oz Optics Ltd.	
10:15 - 10:30	712 - Considerations in specifying ac filters for the Nelson River Bipole III project	Ioni Fernando Manitoba Hydro	659 - On-line Monitoring of Substation Waveform Data for Improved Asset Management and Circuit Operations	Jeff Wischkaemper Texas A&M	
10:30 - 11:00	Networking Break				2G & 2H
	HVDC & FACTS Session 2 - Project Implementation Chair: Rick Valiquette Teshmont	Presenter	Asset Management Session 2 - Transmission Lines Chair: Zibby Kieloch Manitoba Hydro	Presenter	
11:00 - 11:15	673 - New Zealand HVDC Pole 3 Project Testing Approach and Challenges	Richard Sherry Transpower New Zealand	574 - Assessment of toughened glass insulators removed from HVDC lines after more than 40 years of service.	Daryl Klassen Manitoba Hydro	Track 1: Presentation Theatre Track 2: Pan Am Room
11:15 - 11:30	700 - Analysis of Sub-Synchronous Frequency Interactions in Manitoba Hydro System	Chandana Karawita TransGrid Solutions	586 - Using condition data to make intelligent asset management decisions – electricity towers, a case study	William Higinbotham EA Technology	
11:30 - 11:45	676 - A Live Black Start Capability Test of a Voltage Source HVDC Converter	Tarjei Midtsund Statnett	592 - Real-time monitoring of crossing conductor clearance using line mounted LiDAR	Jack McCall Lindsey Manufacturing	
11:45 - 12:00	589 - Bout De L'île (BDI) Static Var Compensators An Overview of Impacts on System Performance, SVC Ratings and Special Control Features	Kamal Habashi Hydro Québec	677 - Spacer-damper selection for twin ACSR Nelson conductors	Pierre Van Dyke Hydro-Québec Research Institute - IREQ	
12:00 - 13:15	Lunch				2G & 2H
	HVDC & FACTS Session 3 - Technology Developments Chair: Dan Kell TransGrid Solutions	Presenter	Asset Management Session 3 - Transformers Chair: Waldemar Ziomek CG Power	Presenter	
13:15 - 13:30	559 - Urban Infeed Utilising Hybrid LCC plus VSC	Carl Barker Alstom Grid	575 - Methodology and Case Study for Deciding on Optimum Station Transformer Replacement Timing	Yury Tsimberg Kinectrics	Track 1: Presentation Theatre Track 2: Pan Am Room
13:30 - 13:45	680 - Innovative Technologies for Stable ACDC Transmission Systems	Walter Kuehn Frankfurt University	635 - Early detection and monitoring of mechanical defects using Vibration Analysis in Power Transformers	Arturo Nunez MISTRAS Group	
13:45 - 14:00	715 - Hybrid STATCOM Systems based on Multilevel VSC Technology – A Modern Concept for Improved Reliability in Transmission Systems	Etienne Veilleux ABB	692 - Cluster assessment for online DGA monitoring	James Dukam Delta-X Research	
14:00 - 14:15	718 - System Impacts of an Efficient DC-DC Transformer	Maryam Salimi University of Manitoba	708 - Asset Management Strategy at Manitoba Hydro: Case Example of the Refurbishment of Transformers at Dorsey Substation	Moritz Werner Reinhausen	
14:15 - 14:45	Networking Break				2G & 2H
	Renewable Energy Session 1 - Large Scale Projects Chair: Andrew Isaacs Electranix	Presenter	Emerging Technology Session 1 - IEC 61850 Experience Chair: Krish Narendra ERL Phase Power Technologies	Presenter	
14:45 - 15:00	590 - Comparison between Canadian and European Grid Connection Requirements for Wind Generation	Patrice Godin Enercon Canada	689 - IEC 61850 Application to Automatic Fault Detection and Isolation	Harmeet Cheema Siemens Energy Automation	Track 1: Presentation Theatre Track 2: Pan Am Room
15:00 - 15:15	609 - Cross-regional power transmission capacity analysis of the combined wind power and solar power and thermal power	Dong Zhang State Energy Research Institute	687 - Resolving the Challenges of Multiple Vendor 61850 Implementations	Mark Roberts SUBNET Solutions	
15:15 - 15:30	597 - Probabilistic Planning and Risk Analysis for Renewable Power Generation Systems	Xiaodong Liang Memorial University	706 - Real-Time Testing of Distributed Generator Protection Implemented with IEC 61850 GOOSE Messaging Using Industrial Relays	Diego Mascarella McGill University	
15:30 - 15:45	678 - A New Coordinated Voltage Control Scheme for Offshore AC Grid of HVDC Connected Offshore Wind Power Plants	Jayachandra N. Sakamuri Technical University of Denmark	660 - Performance Evaluation of IEC 61850 Process Bus (9-2) Based Distributed Bus Differential Protection Scheme	Nuwan Perera ERL Phase	
15:45 - 16:00	Networking Break				2G & 2H
16:00 - 17:30	CIGRÉ PANEL #1 – Lessons Learned from Recent Renewable Integration Studies Chair: David Jacobson, Manitoba Hydro Panelists: Derek Stencik and Bahman Daryanian, GE Energy Management Jim McCaa, 3Tier/Vaisala Dariush Faghani, DNV GL-Energy Jared Alholina, Great River Energy Kevin Gawne and Bagen Bagen (Paper # 580), Manitoba Hydro				Presentation Theatre
17:30 - 19:00	Poster Sessions & Cocktail Reception				2E, 2F and 2G
19:00 - 22:00	Conference Banquet				Banquet Room 5 (ground floor)
Exhibitors Trade Show open from 9:00 am to 4:00 pm and 5:30 to 7:00 pm (Exhibition located in 2E & 2F (2nd floor))					

Agenda - CIGRE Canada Conference, August 31, September 1-2, 2015, Winnipeg, Manitoba

Time		Tuesday, September 1, 2015		Room
17:30	19:00	Regular Poster Session & Cocktail Reception		2E, 2F and 2G (2 nd Floor)
		HVdc & FACTS		
		Paper Title:	Presenter	
		612 - Optimizing the availability of HVDC systems via effective Asset Management	Neil Kirby Alstom Grid	
		566 - Essex STATCOM Life Assessment and Extension	Joshua Burroughs Vermont Electric Company	
		680 - Innovative Technologies for Stable ACDC Transmission Systems	Walter Kuehn Frankfurt University	
		control system	Francois Guay Hydro-Québec Research Institute - IREQ	
		683 - A Hybrid Active Filter for Operation with Harmonically Unbalanced Voltages and Currents	Leopold Herman University Ljubljana	
		Asset Management		
		Paper Title:	Presenter	
		584 - Operations and Maintenance Integrated Platform for Secondary Systems	Zhixue Zhang NR Electric	
		651 - CXI-PT5500: The definitive solution for overhead lines wooden pole condition assessment	Umberto Bovo Cinetix	
		Uprates by Installing Shunt Technology Via Helicopters	Carl Tamm Classic Connectors	
		616 - New Methods of Monitoring Liquid Immersed Transformers and Reactors with Pressure Measurements	Joe Watson ZTZ Services	
		Power System Modeling		
		Paper Title:	Presenter	
		697 - GIC Analysis using PSS®E	Krishnat Patil Siemens PTI	
		influence of geomagnetically induced current – analysis and factory	Waldemar Ziomek CG Power Systems	
		608 - Digital simulation training to system controllers in the AESO	Changling Luo AESO	
		633 - A New Approach for Loadability Limit Estimation	Iurie Axente ABB	
		Renewable Energy		
		Paper Title:	Presenter	
		Smart Grid		
		Paper Title:	Presenter	
		691 - Lessons Learned integrating DLR into EMS Systems	Andrew Stagg Independent Consultant	
		Emerging Technology		
		Paper Title:	Presenter	
		666 - Design of Booster Sheds by Laboratory Experiments for Icing Protection of EHV Post Insulators	Sayyed Mahdi Ale-Emran Université du Québec à Chicoutimi	
		628 - Fault Current Limiter for increasing power generation capacity in meshed networks	Yoram Valent GridON	
19:00	22:30	CONFERENCE BANQUET		Banquet Room 5 (Ground Floor)

Agenda - CIGRE Canada Conference, August 31, September 1-2, 2015, Winnipeg, Manitoba

Time		Tuesday, September 1, 2015		Room
17:30	19:00	Student Poster Session & Cocktail Reception		2E, 2F & 2G (2 nd Floor)
		Paper Title:	Presenter	
		572 - Risk Evaluation of Live Line Working on High Voltage Distribution Lines	Pietro Martini Manchester University	
		573 - Induction Coordination between Power Distribution Lines and Railways	Xiaoyu (Kevin) Wang Carleton University	
		576 - Development of a Hybrid Procedure Controller based on a Lead-Lag and State Feedback Power System Stabilizer using a Different Linearization Approach	Mohamed Masrob Memorial University	
		595 - Marine Tidal power in Kenya	Lucy Patricia Onundo University of Nairobi	
		596 - Structural reliability and risk assessment for the industrial electric power supply systems	Alina Luldasheva Nosov Magnitogorsk State Technical University	
		601 - Thermal Modeling And Simulation of Rectifier Transformers Under Different OFAF Conditions	Luiz Lopes Concordia University	
		605 - Smart Data management and analytics for intelligent grid	Julius Roy Tech Mahindra	
		611 - Maximum Power Extraction from Series Connected Solar Photovoltaic Modules under Partial Shading	Shruthi K J Central Power Research Institute	
		629 - Real-Time Co-Simulated Platform for Energy Conservation of Smart Distribution Network using AMI-based VVO Engine	Moein Manbachi Simon Fraser University	
		634 - Modeling and Coordination of Distribution Network Fuses Using PSCAD	Keaton Wheeler University of Saskatchewan	
		637 - Determining Optimal Smart Inverter Settings for Distributed Photovoltaic Systems	Matthew Rylander Electric Power Research Institute	
		650 - A Laboratory Setup for Teaching IEC 61850 based Substation Automation	Boosabaduge Achintha Wickremasuriya University of Manitoba	
		661 - Estimation of the Insulator Pollution Level based on Frequency Characteristics of the Leakage Current	Saeed Shahabi University of Manitoba	
		662 - Partial discharge pattern recognition for thermally-degraded cellulose-oil insulation	Hamed Janani University of Manitoba	
		670 - Hybrid HVDC Transmission with LCC and Multi-Terminal Full-Bridge Modular Multilevel Converters	Udeesha Annakkage University of Toronto	
		672 - Small-Signal Stability Modelling and, Analysis of an MMC-VSC System	Arunprasanth Sakthivel University of Manitoba	
		686 - PMU Based Apparent Impedance for Transient Stability Boundary	Shengen Chen University of Maine	
		688 - Calibration of a Passive Wireless Electric Field Sensor for the Measurement of Medium/High Voltage	Mana Yazdani University of Manitoba	
		693 - A technique to ensure that the operation of system remains within the designated confines	Mateus Barreto State University of Campinas	
		695 - Load aggregation for demand response using polytopic models and the Minkowski sum	Suhail Barot University of Toronto	
		705 - A New DC Side Fault Tolerant Two-Level Converter	Arunprasanth Sakthivel University of Manitoba	
19:00	22:30	CONFERENCE BANQUET & Best Student Paper Award		Banquet Room 5 (Ground Floor)

Agenda - CIGRE Canada Conference, August 31, September 1-2, 2015, Winnipeg, Manitoba

Time		Wednesday, September 2, 2015			Room
06:30	13:00	Registration			Concourse (2 nd Floor)
06:30	08:00	Breakfast			2G & 2H (2 nd Floor)
07:00	15:00	Speaker Ready Room			Cecil Richards Suite (2 nd Floor)
08:00	09:00	CIGRÉ PANEL #2 – DIAMOND SPONSORS PLENARY (Greg Farthing ABB, Ezio Del Bello SEVES Canada, Alex Poyd Power Systems Consultants, Inc.) WHAT'S NEXT FOR THE POWER GRID? - CHALLENGES AND SOLUTIONS FOR THE TRANSMISSION AND DISTRIBUTION INDUSTRY Panel Chair: Mike Bartel AltaLink			Presentation Theatre (2 nd floor)
09:00	09:30	Networking Break			2G & 2H
		Parallel Technical Sessions - Track 1 (Presentation Theatre (2 nd floor))		Parallel Technical Sessions - Track 2 (Pan Am Room (2 nd floor))	
		HVDC & FACTS Session 4 - Application of Real-Time Tools Chair: Ali Dehkordi RTDS	Presenter	Smart Grid Session 1 - Distribution System Applications Chair: Ken Hamilton Manitoba Hydro	Presenter
09:30	09:45	588 - Validation of Modular Multilevel Converter Real Time Simulator in DC Pole-Pole Fault Scenario	Wei Li Opal-RT Tech	646 - Use of Smart Line Sensors in Distribution Planning and Operations	Corey Senkow Manitoba Hydro
09:45	10:00	599 - Development of MMC STATCOM using RTDS	Jungsoo Park Hyosung Corporation	654 - Smart Switching - the changing nature of automation for the Smart Grid	Gary Ockwell Advanced Control Systems
10:00	10:15	701 - Real-Time Simulator using digital link communication for HVDC control system	Francois Guay Hydro-Québec Research Institute - IREQ	606 - Intelligent Electric Vehicle Charging System	Julius Roy Tech Mahindra
10:15	10:30	667 - Optimization and Sensitivity Assessment of A Tri-terminal VSC-Based HVDC Power Transmission System Using Parallelism and Reduced Memory Consumption Techniques	Ali Yazdanpanah Goharrizi University of Manitoba	669 - Smart EV Charging to Capture Curtailed Renewable Energy	Bahman Daryanian GE Energy Management
10:30	11:00	Networking Break			2G & 2H
		Power System Modelling Session 1 - Insulation Coordination, Controlled Switching, Switching Transients Chair: Vajira Pathirana Teshmont	Presenter	Renewable Energy Session 2 - Distributed Generation Chair: Carl Ho University of Manitoba	Presenter
11:00	11:15	620 - A Generalized Mathematical Approach to Transient Recovery Voltage Calculations	David Peelo DF Peelo & Associates	638 - Application of Intelligent Islanding Relays to Hybrid Distributed Generation Resources	Qiushi Cui McGill University
11:15	11:30	622 - A Utility Perspective on Ferroresonance Overvoltages	Yunfei (Carl) Wang Altalink Management Ltd.	703 - An Australian Distribution Case Study on Power Quality Effects of Varying Residential Distributed Energy Resource Penetration	Timothy Browne PSC Australia
11:30	11:45	643 - Validation of Cable Modelling for HVDC Transient Analysis Simulation	Rose King Alstom Grid	615 - The Impact of Distributed Generation on Voltage Regulating Equipment	Mehdi Vafaei Kinectrics
11:45	12:00	585 - Shunt and Neutral Reactor Sizing Studies for AB-BC 500 kV Intertie	Yunfei (Carl) Wang Altalink Management Ltd.	631 - Optimization of a Photovoltaic system Using Batteries for Peak Demand to Improve Rural Electrification	Umarin Sangpanich Kasetsart University
12:00	13:15	Lunch			2G & 2H
		Power System Modelling Session 2 - Inrush Current and Geomagnetic Disturbances Chair: Dharshana Muthumuni Manitoba Hydro Intl.	Presenter	Smart Grid Session 2 - Transmission System Applications - PMU and dynamic line rating Chair: Brian Archer Manitoba Hydro	Presenter
13:15	13:30	617 - Challenges in circuit coupled FEM Analysis of GIC in Transformers	Pradeep Ramaswamy & Dharam Vir SPX Transformer Solutions	583 - Experiences of Using Wide Area Measurements for Monitoring the Electromechanical Modes in Northern Parts of Finland and Norway	Janne Seppänen Fingrid Oyj
13:30	13:45	649 - RTDS Testing of a Controlled Switching Device Used for Transformer Switching	Waruna Chandrasena Manitoba Hydro	579 - PMU Placement for Inter-area Oscillation Monitoring	Saeed Arabi Powertech Labs
13:45	14:00	707 - False Trips on Transformer Inrush – Avoiding the Unavoidable	Stefan Flemming Siemens Canada	681 - Synchrophasor Data Usage in Real Time Analysis of Grid Events in Indian Power System	P K Agarwal Power System Operation Corporation
14:00	14:15	630 - Energization Study of Parallel Transformers Adjacent to SVC and 500 kV Transmission Line	James Schwartz AltaLink Management Ltd.	582 - Weather conditions based wide area Dynamic Line Rating system for 110 kV network monitoring and contingency analysis	Adam Babs Institute of Power Engineering, Research Inst.
14:15	14:45	Networking Break			2G & 2H
		Power System Modelling Session 3 - On-Line Security Chair: Udaya Annakkage University of Manitoba	Presenter	Emerging Technology Session 2 - Developments in Protection and Equipment Chair: Athula Rajapaske University of Manitoba	Presenter
14:45	15:00	613 - Prospects of a new dynamic simulation software for real-time applications on the Hydro-Québec system	Simon Lebeau Hydro-Québec	647 - Special Relay Testing Performed by Manitoba Hydro During Relay Evaluation/Commissioning	Rajita Perera Manitoba Hydro
15:00	15:15	636 - Implementation of Real Time Transfer Limit Calculation: Manitoba Hydro Experience	Gayan Wijeweera Manitoba Hydro	600 - Advances in Unidirectional Substation Cyber Security	Andrew Ginter Waterfall Security Solutions
15:15	15:30	653 - Selection of Contingencies for Operation of the Bulk Electric System	Pedro Rebellon IESO	696 - Fault Location in Heterogeneous HVDC Grids	Kasun Nanayakkara Teshmont Consultants
15:30	15:45	704 - Best Practices in Building Remedial Action Scheme Models for Steady State Analysis in Operational Studies	Christopher Kulink Bonneville Power Administration	623 - Application of the Saturated Core Based Fault Current Limiter to Improve HVDC System Performance	Chenghong Zhou Manitoba Hydro
15:45	16:15	Closing Session & Prize Draws			Presentation Theatre
Exhibitors Trade Show open from 9:00 am to 3:45 pm (Exhibition located in 2E & 2F (2nd floor))					