

GEOMAGNETIC DISTURBANCE WORKSHOP

*Center for Advanced Energy Studies
995 University Blvd, Idaho Falls, Idaho
Auditorium*

Tuesday, August 27, 2013

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| 7:30 | Registration at Center for Advanced Energy Studies Building | |
| 7:55 | Logistics and Introductions | Craig Wise, Workshop Moderator |
| 8:00 | Welcome | Brent Stacey, Associate Laboratory Director INL National & Homeland Security |
| 8:15 | Keynote Presentation – Space Weather & Solar Cycle 24 | William Murtagh, Program Coordinator NOAA Space Weather Prediction Center |
| Instrumentation and Measurement Session Instrumentation and measurement of GIC caused by GMD on the grid to enable situational awareness, mitigations beyond simulations and modeling. | | |
| 9:00 | DTRA MHD-E3 Phase IVB, Measured Harmonic Response of Power Grid Transformers Subjected to Severe E3/GIC Currents | Mike Rooney, Branch Chief Defense Threat Reduction Agency (DTRA) Dave Fromme, SARA Inc. EM & Pulse Power Applications |
| 9:45 | <i>Break</i> | |
| 10:00 | Space Weather Effects | John Kappenman, Principal Consultant Storm Analysis Consultants |
| 10:30 | GMD GIC Monitoring at INL | Shawn West, Principal Investigator INL N&HS Research Amber Walker, Test Director SARA, Inc. |
| 11:15 | EPRI Sunburst Network | Rich Lordan, Technology Director Electric Power Research Institute (EPRI) |
| 11:45 | <i>Lunch with Electronic Infrastructure Summit Video</i> | |
| Modeling and Analysis Session Status of modeling and simulation of GIC caused by GMD on power grid components. | | |
| 12:45 | GMD Task Force Modeling of Transformers Subjected to GIC | Dr. Luis Marti Hydro One / NERC GMDTF |
| 1:30 | Sensitivity Analysis on ATP Modeled Transformers for E3/GIC Predictions | Dr. Greg Edmiston Scientific Applications & Research Associates (SARA), Inc. |

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| 2:15 | Infrastructure Security | Richard Waggel FERC |
| 2:45 | <i>Break</i> | |
| Academic Session Academic activities and partnerships in study of GIC caused by GMD. | | |
| 3:00 | Power Flow / Losses During GIC | Dr. Mack Grady, Professor Baylor University |
| 3:30 | EMP SIG / InfraGard National | Chuck Manto, Instant Access Network CEO George Washington University |
| 4:00 | End of Day Discussion | Scott McBride INL National & Homeland Security |
| 5:00 | <i>Adjourn</i> | |

Wednesday, August 28, 2013

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| 8:00 | Keynote Presentation – GMD Technology & Policy | Dr. Chris Beck, President The Electric Infrastructure Security (EIS) Council |
| Industry and Government Activities Session Activities by industry, government and the recent EMP commission. | | |
| 8:45 | ABB Transformer Vulnerability | Dr. Ramsis Girgis, Technical Manager ABB St. Louis |
| 9:15 | GMD Modeling | Dr. Tom Overbye, Professor University of Illinois / PowerWorld |
| 10:00 | Transformer Monitoring and HydroOne System Preparedness | Dr. Luis Marti HydroOne |
| 10:45 | <i>Break</i> | |
| 11:00 | GMD Mitigation Strategy | David Wojtczak, Team Leader American Transmission Company |
| 11:45 | DHS Recovery Transformer | Rich Lordan, Technology Director EPRI |
| 12:15 | <i>Lunch with Recovery Transformer Video</i> | |

Mitigation Session

Discussion of the wide array of mitigations offerings.

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| 1:15 | Case Simulation Study Ground Interrupt Device on INL 138kV Loop | Dr. Greg Edmiston Scientific Applications & Research Associates (SARA), Inc. |
| 2:00 | EMPrimus / ABB Solid Ground | Wally Jensen, Director, Electrical Engineering Fred Faxvog, Senior Program Director EMPrimus / ABB |
| 2:45 | SEL Protection and Control | Dr. Greg Zweigle, Principal Research Engineer, R&D Schweitzer Engineering Laboratories, Inc. |
| 3:30 | <i>Break</i> | |
| Panel Discussion | | |
| Review, identification of research gaps, and path forward. | | |
| 3:45 | Chris Beck, Ramis Girgis, Mike Rooney, Chuck Manto, Luis Marti, Richard Lordan, David Fromme <i>Moderator: Craig Wise</i> | |
| 4:45 | End of Day Workshop Report | Scott McBride INL National & Homeland Security |
| 5:00 | <i>Adjourn</i> | |

Thursday, August 29, 2013 – INL Test Bed Tours

Bus will pick up at Hilton Garden Inn on Lindsay Blvd.

Tour Locations:

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| 8:00 | <ul style="list-style-type: none"> • Materials and Fuels Complex (MFC) Test Site • Critical Infrastructure Test Range Complex (CITRC) • Scoville Substation • Antelope Substation • Experimental Breeder Reactor -1 Museum |
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Tour Guide: Don Miley

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| 12:00 | Return to Hilton Garden Inn |
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