IEEE Joint Section & PES Meeting

Potential Power System Impacts of Geomagnetic Disturbances and High Altitude Electromagnetic Pulses

Dr. Thomas Overbye, TEES Distinguished Research Professor, Texas A&M University

Cost:
$30 for IEEE member and $30 for one guest
$20 IEEE Student/Life members and $20 for 1 guest
$50 Non-members

Registration: https://goo.gl/f8sJ1B
Questions? Email Maryclaire Peterson at mpeter2@entergy.com

When
May 8, 2017, 6:30PM – 9:00PM

Where
Austin's Restaurant
5101 W. Esplanade Ave.
Metairie, Louisiana 70006

1 PDH will be provided.
RSVP by May 4, 2017.

Abstract

Recently there has been growing concern about the impact on electric grids of what the North America Electric Reliability Corporation (NERC) calls High-Impact, Low-Frequency (HILF) events. This presentation covers two such HILF risks, geomagnetic disturbances (GMDs) and high altitude electromagnetic pulses (HEMPs), with a focus on putting the risk of these events in an appropriate context. GMDs are naturally occurring events caused by corona mass ejections (CMEs) from the sun. In contrast, HEMPs are caused by the detonation of nuclear devices by an adversary at high altitudes in the earth's atmosphere. Both have the potential to affect the power grid by disturbing the earth's magnetic field, which in turn can induce quasi-dc electric fields in the earth (with frequencies usually much below 1 Hz). These electric fields then cause geomagnetically induced currents (GICs) to flow in the high voltage grid that can cause half-cycle saturation in the power transformers, resulting in increased transformer reactive power losses resulting in widespread blackouts and, perhaps, transformer damage. This presentation provides an overview of the impact of these events, shows how these impacts can be modeled and visualized, discusses NERC standards, and presents potential mitigation strategies.

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Presenter Biography: Dr. Thomas Overbye

Andrew Thomas J. Overbye is a TEES Distinguished Research Professor in Electrical and Computer Engineering at Texas A&M University (TAMU). Prior to joining TAMU in January 2017 he was the Fox Family Professor of Electrical and Computer Engineering at the University of Illinois at Urbana-Champaign. He received his BS, MS, and Ph.D. degrees in Electrical Engineering from the University of Wisconsin-Madison. He was employed with Madison Gas and Electric Company from 1983 to 1991. Dr. Overbye is the original developer of PowerWorld Simulator and a co-founder of PowerWorld Corporation. He is also the recipient of the Alexander Schwarzkopf Prize for Technological Innovation, a University of Wisconsin-Madison College of Engineering Distinguished Achievement Award, the IEEE Power and Energy Society Outstanding Power Engineering Educator Award and is a member of the US National Academy of Engineering. His research interests include power system operations, dynamics, visualization, cyber security, geomagnetic disturbances and HEMP.

Menu:

Salad
Evangeline Salad (Mixed Greens with Almonds, Tomatoes, Cranberries)

Entree (Choice of 1)

- 8oz Petit Filet with Butter with Potatoes and Vegetables
- Trout Amandine with Potatoes and Vegetables
- Chicken Picatta with Lemon Butter & Caper Sauce
- Eggplant Parmesan with Angel Hair Pasta and Marinara
- Pasta Primavera

Dessert
White and Dark Chocolate Mousse Cake

Unlimited Soda, Tea, and Water
Cash Bar also available

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