



Southern Minnesota

MARCH 1997

IEEE Southern Minnesota Section

IEEE Southern Minnesota Section Meeting

Speaker: Prof. Vern Albertson
University of Minnesota

Topic: Geomagnetic Storms

Date: Monday, March 31

Time: 6:30 pm -- pizza
7:00 pm -- presentation

Place: Mann Hall
Mayo Medical Sciences Building
321 3rd Avenue SW
Rochester, Minnesota

Solar Storms Beget Geomagnetic Storms Beget Blackouts

Geomagnetic storms, or geomagnetic disturbances (GMDs), are transient disturbances in the earth's magnetic field caused by solar phenomena. GMDs are caused by dynamic changes in the solar wind, consisting of charged particles emitted by the sun, that can interact with the geomagnetic field under certain conditions.

GMDs affect a number of man-made systems, and can have serious effects on electric utility power systems. A major geomagnetic storm on March 13, 1989, triggered a system-wide blackout in Quebec that affected some six million people for nine hours, resulting in costly damage to several large transformers in the United States. The effects of that storm generated great concern over the vulnerability to GMDs of power systems in the United States.

My presentation will cover the nature of geomagnetic storms, the coupling mechanism to electric power systems, the effects on power system equipment and operation, possible mitigation methods, and the need for a solar-wind monitoring satellite for accurate geomagnetic storm alerts.

Dr. Vern Albertson is a professor in the Department of Electrical Engineering at the University of Minnesota, and he is director of the Center for Electric Energy, an organization he helped to create in 1981. His teaching, research and consulting interests include power system analysis and transient phenomena; ground current

effects and problems; and geomagnetic storm effects on power systems.

Dr. Albertson directed the pioneering research on measurement and effects geomagnetically-induced currents (GIC) in power systems in 1969, and he has since collaborated with Minnesota colleagues in the power industry to help establish Minnesota as a world leader in this research area.

In 1993-94, Dr. Albertson served as IEEE Region 4 director. At present he is chair of the IEEE Working Group on Geomagnetic Disturbances and Power System Effects. He received the Edison Electric Institute Power Engineering Educator Award in 1985, the IEEE Power Engineering Education Committee Distinguished Service Award in 1986, and the Westinghouse Nikola Tesla Award for Meritorious Service to the Electric Power Industry in 1991. He is a member of Eta Kappa Nu, Tau Beta Pi, Phi Kappa Phi, and the American Society for Engineering Education.

Dr. Albertson is a Fellow of the IEEE, and a registered Professional Engineer in Minnesota. He received his Ph.D. in Electrical Engineering from the University of Wisconsin, Madison, in 1962.

Nominees & Volunteers Sought

IEEE Southern Minnesota Section officers will be elected for the 1997-98 term at our May section meeting. The following four officers will be elected: chair, vice chair, secretary, treasurer.

If you are an IEEE member in good standing, and if you would like to run for one of these offices -- or nominate someone else -- please contact any member of the nominating committee (Dick Hall, Chris Kimble, Noelle Sesta, Duane Wenzel; see directory on page 2 for phone numbers).

We are also actively looking for volunteers to run several of the standing committees. Please contact a member of the nominating committee if you would like more information about any of these opportunities:

Computer Society (co-chair)

E-mail (new committee)

Engineering Week, Science Fair (new committee)

Power Society (prospective committee)

Workshop Development (new committee)

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