

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)	
)	
Amendment of Parts 1, 2, 15, 74, 78, 87, 90, and 97 of the Commission's Rules Regarding Implementation of the Final Acts of the World Radiocommunication Conference (Geneva, 2007) (WRC-07), Other Allocation Issues, and Related Rule Updates)	ET Docket No. 12-338
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To the Commission:

**Reply Comments of Nikolaus E. Leggett, N3NL
Amateur Radio Extra Class Operator, Inventor, and Analyst
To the Comments of American Electric Power Company (AEP)**

I am a certified electronics technician (ISCET and iNARTE) and an Extra Class amateur radio operator (call sign N3NL). I hold an FCC General Radiotelephone Operator License with a Ship Radar Endorsement. I am an inventor holding three U.S. Patents. My latest patent is a wireless bus for digital devices and computers (U.S. Patent # 6,771,935). I have a Master of Arts degree in Political Science from the Johns Hopkins University.

I am one of the original petitioners for the establishment of the Low Power FM (LPFM) radio broadcasting service (RM-9208 July 7, 1997 subsequently included in MM Docket 99-25). I am also one of the petitioners in the docket to establish a low power radio service on the AM broadcast band (RM-11287). I have filed a total of over 200 formal comments with the FCC over the years since the 1970s. I have filed comments with other Federal agencies as well including the USPTO, FAA, FERC, EPA, and the TSA.

Reply Comments

The following are my reply comments to the comments of American Electric Power Company (AEP) submitted on January 2, 2013 to the Commission.

The comments submitted by the AEP suggest an issue with the Power Line Carrier (PLC) technology that is more important than just the possible allocation of 135.7 – 137.8 kHz for use by the Amateur Radio service.

If AEP is correct in their statements that the PLC system is vulnerable to low power amateur radio transmissions, then the PLC system is also vulnerable to major failures due to more powerful emissions from the following sources:

1. Solar geomagnetic storms (also known as geomagnetic disturbances (GMD))
2. Electromagnetic pulse (EMP) attacks (both nuclear-based events and conventional attacks using flux compression generators)
3. High-powered terrorist transmitters

There is the serious possibility that the high tension power lines (Bulk-Power System) could be disabled due to interference and damage to the PLC system itself.

Federal Energy Regulatory Commission (FERC) Actions

At the current time, the Federal Energy Regulatory Commission is processing a docket on the subject of Geomagnetic Disturbances (GMDs) and their impacts on the Nation's Bulk-Power System. (**Reliability Standards for Geomagnetic Disturbances RM12-22**)

I have submitted comments to this docket raising the question of the impact of Geomagnetic Disturbances on the PLC system. Refer to Appendix A.

Recommended Actions

The Commission should cooperate with the Federal Energy Regulatory Commission to study the impact of Geomagnetic Disturbances (and other high-power sources) on the operation and reliability of the PLC systems. This should include a joint public Notice of Inquiry (NOI) on this subject. In this docket, the Commission should also actively identify means for constructive sharing of some of the LF spectrum with amateur radio operators.

Respectfully submitted,

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January 3, 2013

In compliance with FCC rules, I have sent a paper copy of these Reply Comments to AEP at the following address:

Mr. Mark G. Majka
American Electric Power
700 Morrison Road
Gahanna, OH 43230-6642

Appendix A: Comments to the Federal Energy Regulatory Commission

**Before the
Federal Energy Regulatory Commission
Washington, D.C. 20426**

In the Matter of)	
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Reliability Standards for Geomagnetic Disturbances)	Docket No. RM12-22-000
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To the Commission:

Comments of Nickolaus E. Leggett, Analyst and Inventor

The following are my comments on the Notice of Proposed Rulemaking (NPRM) to direct the North American Electric Reliability Corporation (NERC) to submit reliability standards addressing the impact of geomagnetic disturbances (GMD) on the operation of the Bulk-Power System.

The Federal Energy Regulatory Commission (FERC) should be congratulated on this docket directed at this important threat to the electric power system and to the Nation's economy.

I have the following suggestions for the FERC.

1. FERC should cooperate with the Federal Communications Commission (FCC) to make sure that essential communications services are not damaged or disabled by GMD events. These services are needed for the effective operation of the Bulk-Power System.
2. FERC should direct its engineering staff to consider if Direct Current (DC) transmission lines are less vulnerable to GMD events than Alternating Current (AC) power lines are.
3. On a more speculative note, FERC engineers should examine the possibility that useful energy can be extracted from GMD events and applied to practical use.
4. FERC should examine the impact of GMD events on the Power Line Carrier (PLC) systems that are operated in the 9 – 490 kHz radio band.

Thank you for your consideration of these suggestions.

Respectfully submitted,

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December 2, 2012