

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC. 20554**

In the Matter of)
)
Amendment of Part 15 regarding) **ET Docket No. 04-37**
New Requirements and)
Measurement Guidelines for Access)
Broadband over Power Line)
Systems)

May 24, 2004

To: The Commission

**Reply Comments from Thomas A. Brown
to the Comments Filed by Thomas A. Brown
(document number 6516183144, received/adopted 05/03/04)**

I repose great hope that the information contained in this Reply Comment will illuminate a serious matter mentioned in my comment to the NPRM 04-37. Apparently some members of the FCC staff have/are causing or allowing incorrect information to color this proceeding. To date, BPL proponents maintain that there have been no reports of harmful interference received by the FCC. This is simply not true. They have certainly been received, but shelved for lack of interest, discarded, or delayed.

Failure to acknowledge receipt of reports of harmful interference. In my comment to NPRM 04-37, on page 7, paragraph 1, I stated:

Quote

Overall comments. My observations, related to 3 very small trial systems in the local geographic area clearly indicate that BPL, if allowed to be deployed in the current configuration will produce an Enforcement nightmare for the FCC, the Utilities and the Licensed Services.

Unquote.

Recent experience with the FCC's lack of any response to my formal complaint, indicates that there may NOT be any such nightmare as regards the FCC, if the FCC continues the process demonstrated to-date, that of continuously ignoring my written complaint, subsequent written status inquiry and attempted telephone status inquiry. My comment presupposed that complaints would **actually** be received, acknowledged and enforced. It seems that the FCC OET is accumulating complaints and shielding them from view or due process, thereby allowing BPL proponents to continue to claim that there have been no substantiated complaints of harmful interference. If there is some other reason, it is not apparent.

Reports of harmful interference required to be sent to the FCC Office of Engineering Technology instead of the FCC Enforcement Bureau. This in and of itself is a peculiarity. None of the subject equipment is operating under an Experimental License - all is operated under Part 15. Apparently, the OET has intervened in what would otherwise be a routine Enforcement issue.

My ignored complaint with it's supporting attachments and my ignored inquiry are provided at the end of this comment. That my complaint and subsequent inquiry have been ignored is illustrated in the following chronological table:

Formal Written Complaint Chronology

April 27, 2004 Formal Complaint sent via email
May 5, 2004 1st RESEND of Formal Complaint via email
May 7, 2004 2nd RESEND of Formal Complaint via email
May 11, 2004 3rd RESEND of Formal Complaint via email
May 14, 2004 4th RESEND of Formal Complaint via email
May 18, 2004 5th RESEND of Formal Complaint via email
May 21, 2004 6th RESEND of Formal Complaint via email

Written Status Inquiry Chronology

May 5, 2004 Status inquiry sent via email
May 7, 2004 1st RESEND of Status Inquiry via email
May 11, 2004 2nd RESEND of Status Inquiry via email
May 14, 2004 3rd RESEND of Status Inquiry via email
May 18, 2004 4th RESEND of Status Inquiry via email
May 21, 2004 5th RESEND of Status Inquiry via email

Attempted Telephone Inquiry to Mr. James Burtle, Chief of OET licensing - Chronology

May 12, 2004 Reached Mr. Burtle's voice mail and left detailed contact information
May 14, 2004 Reached Mr. Burtle's voice mail and left detailed contact information
May 17, 2004 Reached Mr. Burtle's voice mail and left detailed contact information
May 18, 2004 Reached Mr. Burtle's voice mail and left detailed contact information
May 21, 2004 Reached Mr. Burtle's voice mail and left detailed contact information

I HAVE NOT HAD ANY REPLY, ACKNOWLEDGEMENT OR CONTACT, FROM ANY PERSON AT THE FCC'S OET WITH RESPECT TO ANY OF THE FOREGOING AS OF THE DATE AND TIME OF THIS SUBMITTAL.

The FCC's Internet website at www.fcc.gov contains a "Customer Service Standards" section that may be accessed at <http://www.fcc.gov/css.html> . There, the FCC's response policy states that inquiries will receive a reply within 2 days and a full response within 20 days, based on the complexity of the issue.

Early in this complaint process, OET could have simply acknowledged receipt of my complaint and said "that they were working on it" This would have, however, necessitated acknowledgement of the receipt of complaints of harmful interference.

Such a response is now, clearly, not suitable, and neither is a "too busy" response or the suggestion that my complaint is now subject to any ex-parte process to further obfuscate or delay a now-timely and proper response.

Respectfully submitted,

Thomas A. Brown Amateur Radio licensee N4TAB
5525 Old Still Rd.
Wake Forest, NC
919-556-8477 (w)
919-528-3104 (h)
n4tab@earthlink.net

Copy of my Formal Complaint. My Formal Complaint, originally sent on April 27, 2004, is copied below, along with the attachments, shown in-line, following.

To:

James Burtle, FCC
Alan Stillwell, FCC
Ann Wride, FCC
Riley Hollingsworth, FCC
Len Anthony, Progress Energy Corporation
Matt Oja, Progress Energy Corporation
Bill Godwin, Progress Energy Corporation
Chris Imlay, ARRL Counsel

Date: April 27, 2004

This complaint addresses the Progress Energy (Raleigh, NC) BPL trial areas situated along James Slaughter Road in southern Wake County, NC. This complaint should be considered in concert with previous complaints lodged with Progress Energy and The Federal Communications Commission regarding interference by devices operating under FCC Part 15 and which radiate harmful interference into the RF spectrum allocated to, and used by licensees of the Amateur Radio Service.

Notwithstanding previous efforts by Progress Energy and it's vendor, Amperion, Inc. to resolve outstanding complaints regarding interference to Amateur Radio spectrum, a recent correspondence from Mr. Len Anthony of Progress Energy states that his company's efforts had yielded results suitable to Progress Energy and that they would take no further action in this regard. This correspondence coldly and effectively terminates the good faith relationship that was engendered in October, 2003 with a view toward a cooperative effort that might yield a technical solution to an otherwise mutually adversarial situation.

In assessing the current technical aspects of the Progress Energy BPL trials, I believe that the interference described in this and previous complaints falls under Part 15 for the following reasons:

- 1) The Experimental license WD2XCA issued to Progress Energy (file number 0011-EX-PL-2003-granted February 10, 2003) allows operation of an experimental radiator within a 20 mile radius of the coordinates N35:56:58, W78:34:23. None of the 3 trial sites in southern Wake County are within this radius.
- 2) Mr. Len Anthony's correspondence of April 20, 2004 specifically refers to FCC Rules, Part 15 as their model for compliance.

Therefore, my complaint is that Progress Energy's BPL trial site(s) emit radiated RF components that are harmful to the spectrum allocated to the Amateur Radio Service by the FCC and also provided under international treaty.

In preface to the specifics of my complaint, I would like to put into perspective, the use of an Amateur Radio HF mobile radio in the trial areas. As it is remarkably convenient that there are only a small number of Amateur Radio operators geographically situated near the trial areas to hear the BPL signals from their homes, we have been, and are, using mobile HF equipment in the place of fixed installations in order to gauge the impact of interference in the respective geographical areas. Thus, an HF mobile radio, in the current context, is a "stand-in" for a fixed station at or near

the same geographic location. It should be noted that, due to the generally poor efficiency and polarization of the HF mobile antennas, the results reported herein significantly *under-represent* the signal levels that would be encountered by fixed stations using horizontally polarized antennas, such as wire dipoles or directional arrays, operating in the same vicinity.

On Sunday, April 25, 2004, I drove my vehicle to the James Slaughter Road trial-site area. Upon arrival near the entrance to the Whitehurst residential subdivision, I began tuning through the allocated Amateur Radio bands and immediately observed significant interference to the 12 meter band, which extends from 24.890 MHz to 24.990 MHz. The interference was sufficient to mask, and did mask, useful signals that were clearly heard away from the BPL trial area. That the unique RF "signature" of the Progress Energy equipment completely blankets and renders useless an otherwise useful spectrum segment, clearly constitutes harmful interference.

This interference accrues into other portions of the allocated Amateur Radio HF spectrum, as well. Within the Whitehurst and Woodchase subdivisions (both adjacent to James Slaughter Road) BPL interference can be heard in the lower 25 kHz of the 10 meter band (28.000 MHz to 28.025 MHz).. In addition, near the entrance to the Whitehurst subdivision, the entire 40 meter band (7.000 MHz to 7.300 MHz) is obscured by BPL interference. This interference does not radiate from the overhead wires alone; radiation also occurs from the pedestals where the underground wiring connects to customer distribution equipment.

Note that this interference is not confined to a single, narrow tone (carrier) as would be experienced from a typical Part 15 device such as an answering machine. This BPL interference signature consists of carriers spaced at approximately 1 kHz intervals through the entire 12 meter band, rendering normal communications operation impossible.

Where apparent attempts by Progress Energy to vacate the Amateur Radio spectrum have occurred in these systems, it has become obvious that the characteristics of any built-in "mitigation" filters do not exhibit "sharp" edges and that the "granularity", or precision with which any such filters can be defined and applied, is quite coarse. That is to say, that it seems that it is not possible to apply a "brick wall" filter topology, cleanly "notching" spectrum segments, rather, the filter "corner" must be set (possibly empirically) considerably away from the desired edge of the spectrum to be avoided. This observation suggests that the oft-touted claims of an "adaptive mitigation" process are overstated, at best.

Members of the local Amateur Community, including the undersigned, have waited patiently for several months while Progress Energy and it's vendor have attempted, in fits and starts, to remove the allocated Amateur Radio spectrum from that spectrum utilized by their installed BPL systems. The result, after these months of observation, is that Progress Energy has not caused these systems to cease interference to the Amateur Radio spectrum.

There is a single conclusion that can be drawn from the history of this situation: interference from this type of system is a function of the design and cannot be mitigated, else it would have been accomplished by now. Further, it seems that this technology is quite immature and inherently lacking the technological merits so widely accorded it, owing to the lack of success following months of efforts toward effecting a solution.

FCC part 15 rules quoted below state that:

§ 15.5 General conditions of operation.

(a) Persons operating intentional or unintentional radiators shall not be deemed to have any vested or recognizable right to continued use of any given frequency by virtue of prior registration or certification of equipment, or, for power line carrier systems, on the basis of prior notification of use pursuant to § 90.63(g) of this chapter.

(b) Operation of an intentional, unintentional, or incidental radiator is subject to the conditions that no harmful interference is caused and that interference must be accepted that may be caused by the operation of an authorized radio station, by another intentional or unintentional radiator, by industrial, scientific and medical (ISM) equipment, or by an incidental radiator.

(c) The operator of a radio frequency device shall be required to cease operating the device upon notification by a Commission representative that the device is causing harmful interference. Operation shall not resume until the condition causing the harmful interference has been corrected.

Progress Energy is operating equipment under the terms of Part 15.5a, b and c above, and is subject to the restrictions therein.

I, therefore, respectfully demand that the Federal Communications Commission take the action specified under Part 15.5c and cause Progress Energy to cease operation of the Part 15 devices mentioned in this correspondence.

Respectfully,

Thomas A. Brown Amateur Radio licensee N4TAB
5525 Old Still Rd.
Wake Forest, NC
919-556-8477 (w)
919-528-3104 (h)
n4tab@earthlink.net

Attachments:

Previous complaints made to Progress Energy
Previous complaints made to the FCC
Copy of Mr. Len Anthony's email as referenced above

[Revision note: Paragraph 9 had two typographical errors that were subsequently mentioned in a follow-on errate email. Corrections were made in the foregoing paragraph 9 (only) and are underlined in both cases.]

Copy of my written inquiry. My written inquiry, originally sent via email on May 5, 2004, is copied below.

To:

James Burtle, FCC
Alan Stillwell, FCC
Ann Wride, FCC
Riley Hollingsworth, FCC
Len Anthony, Progress Energy Corporation
Matt Oja, Progress Energy Corporation
Bill Godwin, Progress Energy Corporation
Chris Imlay, ARRL Counsel

Date: May 5, 2004

On April 27, 2004, I submitted, via email, a Formal Complaint regarding harmful interference produced by and emanating from, Part 15 devices (and their connected/interconnected wiring), operated by Progress Energy Corporation in Wake County, NC. In that complaint, I gave details of the interference and the method of observation. I believe that my observations and the reporting thereof, were and are sufficient to cause the initiation of an Enforcement action by the FCC. As of today, I have received no answer or reply.

Therefore, I inquire:

- 1) was my complaint received?
- 2) please advise the FCC case number/action number assigned for my records and for use in follow-on correspondence
- 3) please advise of any action taken to date and
- 4) if no action has been taken, please indicate when I might expect action to be taken

Respectfully,

Thomas A. Brown Amateur Radio licensee N4TAB
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919-528-3104 (h)
n4tab@earthlink.net

Copies of attachments to my original complaint are provided below for the convenience of the reader.

Len Anthony, Progress Energy Regulatory Affairs

cc:

Bill Godwin, Progress Energy
Anh Wride, FCC
David H.Solomon, FCC
James R.Burtle, FCC
Riley Hollingsworth, FCC (FYI)
Ed Hare, ARRL
Frank A. Lynch, ARRL

Saturday, March 13, 2004

This e-mail letter is a formal complaint of interference received from several Broadband over Power Line (BPL) installations operated by Progress Energy in the Wake County, North Carolina area.

I am:

Gary Pearce KN4AQ
116 Waterfall Ct.
Cary, NC 27513
919-380-9944
kn4aq@arrl.net

I encountered all of this interference while mobile, or visiting the stations of other amateur radio operators. I do not hear any BPL interference at my home in Cary at this time.

November 16, 2003. I first encountered BPL interference on this date, near the Wakefield subdivision in north Raleigh, along Falls of the Neuse Road near Wakefield Pines Rd. The interference appeared as a series of closely spaced RF carriers, approximately 1 kHz apart, covering the lower half of the 10 meter amateur radio band, from 28 to near 29 MHz (and some spectrum below that band, including the 40 CB radio channels near 27 MHz). Some of the carriers had a little "tik-tik-tik" sound at about a 2 Hz rate. The interference was strong - S-9 - for about a half mile along Falls of the Neuse Road, and obliterated several amateur radio signals that I was monitoring.

I understand this was the Phase I trial area, and the test has been discontinued.

January 15, 2004. On this and several subsequent dates, I received interference while driving along Holland Church road between 1010 Road and Pagan Rd. in southern Wake County, specifically in the vicinity of Feldman Dr. The signature of the interference was the same: closely spaced carriers, about 1 kHz apart, some with a tik-tik-tik modulation, and occasionally a longer burst of what sounded like data. The interference covered two blocks of spectrum, from 23.44 - 26.08 MHz (including the amateur radio 12 meter band) and 27.9 - 31.7 MHz, (including the amateur radio 10 meter band). The interference was strong - S-9 - for about a half mile along Holland Church road, and audible in places along Pagan Rd. It obliterated several amateur radio signals that I was monitoring as I drove through the area.

I also received interference with the same signature in several spots along Feldman Dr., in various other segments of the high-frequency spectrum - near 11 and 15 MHz in particular. The signals were weaker, but plainly audible. Onc caused a "beat note" against the 15 MHz WWV time and frequency reference signal.

I have subsequently been through this area several times, and the interference is still present. My last visit was on February 28th.

February 20, 2004. On this and several subsequent dates, I received interference while driving along NC Highway 55 and James Slaughter Rd, just north of the town of Fuquay-Varina. The interference was strongest along James Slaughter Road, opposite the Woodchase subdivision. Again, the signature of the interference was RF carriers, about 1 kHz apart, with a bit of digital modulation now and then, including the tik-tik-tik at about a 2 Hz rate.

This interference was across 21.9-25.7 MHz (including the amateur radio 12 meter band) and 27.5-30.0 MHz (including the amateur radio 10 meter band). The interference was S-9 along James Slaughter Road, and S-5 in the Food Lion parking lot at NC-55, and obliterated several amateur radio signals that I was monitoring.

In the Woodchase subdivision, I also heard the "BPL signature" signals on several other points in the high frequency spectrum. The signals were weaker, but plainly audible. I also heard signals in the 7 and 24.5 MHz area about a mile further north on James Slaughter Road, near the Whitehurst subdivision. These signals were S-6 to S-9 for about 1/4 mile along James Slaughter Road.

I most recently heard this interference on March 5th, 2004.

Finally, on February 28, 2004, I personally visited the homes of three amateur radio operators who live in the vicinity of the Progress Energy Phase II BPL trials, and observed interference as received at their stations as follows:

Mike Payne KM4UT
5813 HEATHILL CT
Raleigh, NC

Mike lives .7 miles south of the trial site on Holland Church Road. He is using a dipole antenna at about 30 feet. I observed that he was receiving a clear but weak BPL "signature" in the top half of the 10 meter band, above 28.8 MHz, and many smaller clusters of individual carriers in the band below that.

Ted Root N1UJ
509 WYNDHAM DR
Fuquay-Varina, NC

Ted is about a half mile southwest of the James Slaughter Road site. He is also using a dipole antenna at about 40 feet. He was receiving weak but clear BPL signature signals across the 25 and 28 MHz areas.

Roland Erickson WA0AFW
201 WILBON ROAD 301B
Fuquay-Varina, NC

Roland is about a half mile south of the James Slaughter Rd. site. He is using a dipole antenna in the attic of a retirement village building. He has a very high ambient noise level (S-6) across the 25 and 28 MHz bands, but was receiving the BPL signature signals clearly above that noise level across those bands.

You might ask if my complaint of interference while mobile, some distance from my home, is justified. I contend that it is, for several reasons.

First, amateur radio is a very "mobile" service. Tens of thousands of amateur radio operators have and use high frequency mobile equipment, and we can be found anywhere, using all hf bands, at completely unpredictable times.

Second, the Progress Energy Phase II trials are in very limited area tests. There are no amateur radio operators living inside the neighborhoods being served, though there are several within interference range - about a mile. We are justified in traveling to the sites with normal amateur radio equipment, operated in a normal manner, to observe and complain about interference we receive. This observation must be extrapolated to a wider geographic area to anticipate the kind

of interference that would be received if BPL were to be widely deployed, especially in denser suburban and urban neighborhoods.

You might also ask if weak BPL signals constitute harmful interference. I contend that they do. Amateur radio operation is unlike most other radio operation, in that amateurs tune across their band segments looking for signals. Often we are looking for weak signals from distant parts of the world. Our predominant modes are single sideband and cw. In those modes, a series of carriers 1 kHz apart presents a most irritating series of "beat notes" - tones that vary in pitch as the spectrum is tuned. At 1 kHz spacing, they are continuously present in a receiver using customary bandwidth filters. And even weak BPL signals can make weak amateur radio signals difficult or impossible to receive.

The presence of any BPL signal of any strength at either a home or mobile station at any location is an unwarranted incursion in the amateur radio bands, and is also a problem for anyone tuning shortwave broadcast or other radio services.

Thanks for your consideration. I look forward to hearing the results of the investigation into my complaints.

Sincerely,

Gary Pearce KN4AQ

Gary Pearce KN4AQ editor, SERA Repeater Journal
Cary, NC www.sera.org
919-380-9944 kn4aq@sera.org
kn4aq@arrl.net
AOL/Yahoo Instant Messenger: KN4AQ
(send e-mail to be put on my "buddy list")

To: Len Anthony, Progress Energy Regulatory Affairs

From: Gary Pearce KN4AQ
116 Waterfall Ct.
Cary, NC 27513
919-380-9944
kn4aq@arrl.net

cc:

Bill Godwin, Progress Energy
Anh Wride, FCC
James R. Burtle, FCC
Riley Hollingsworth, FCC (FYI)
Ed Hare, ARRL
Frank A. Lynch, ARRL

Monday, March 29, 2004

This e-mail letter is a second formal complaint of interference received from several Broadband over Power Line (BPL) installations operated by Progress Energy in the Wake County, North Carolina area. This complaint covers interference on NEW frequencies that was not present in my first complaint filed on March 13th.

In my March 13th complaint I detailed interference that I observed while operating my mobile amateur radio equipment in the vicinity of the Progress Energy Phase II BPL trial areas in southern Wake County, North Carolina. No one from either Progress Energy or the FCC has contacted me as a result of that complaint (except a request from the FCC to drop David Solomon from the recipient list, which I have done). I have seen Bill Godwin in a somewhat chance encounter at the Holland Church site, and we had a good discussion on the state of the trial.

I have observed that Progress Energy has changed the spectrum used for the overhead line segments in both trial areas. If I'm correctly assuming that this was done to respond to complaints, and demonstrate frequency agility and the ability to mitigate interference by avoiding amateur radio spectrum, the attempt is appreciated, but it was not completely successful. New amateur radio and shortwave spectrum is now receiving interference, and that is the basis of this complaint.

On March 20, 2004, in the Woodchase subdivision area near Fuquay-Varina, where BPL signals had covered the 12 and 10 meter bands, I observed clear, strong BPL signature signals from 21.5 to 24.90 MHz, and 25.49 to 28.0 MHz. This almost cleared amateur radio spectrum, but not quite.

The lower segment, from 21.50 to 24.90 MHz, encroached clearly on the bottom 10 kHz of the 12 meter band, from 24.89 to 24.90 MHz, and what I'll call "residual" BPL carriers - carriers at the edge of the main spectrum that trail off in amplitude over the course of 10 to 20 kHz - encroached further. The residual carriers present a correspondingly decreasing problem of interference, but when the bulk of the BPL carriers are strong, the residual carriers can also interfere with weak amateur radio signals.

Note that if a BPL operator is attempting to place a BPL block adjacent to the bottom of an amateur band, they should be aware that these residual carriers will fall across an area of extreme interest where amateurs use Morse code to communicate with distant, often very weak, amateurs in remote parts of the globe. Additional care should be taken to avoid letting this "residual" interference cross the bottom few kHz of any amateur band.

The higher segment, from 25.49 to 28.0 MHz, also left some residual carriers encroaching on the bottom of the 10 meter band at 28 MHz. The main carriers did cover all 40 CB channels and interfered with signals I monitored there.

Then I drove through the Holland Church Road trial site and observed no change since my March 13th complaint - the BPL signals still covered the 12 and 10 meter ham bands and adjacent spectrum.

On March 23, 2004, I returned to the Holland Church Road trial area. That's when I ran into Bill Godwin and two other Progress Energy engineers, observing and reporting on some difficulty that Amerperion was having moving the spectrum on the overhead line. The signals were gone from the 12 and 10 meter bands, and appeared erratically elsewhere. Since this was an effort in progress, I didn't worry about the signals I received.

On March 28, 2004, I returned to the Holland Church site again. This time I monitored signals on the following spectrum blocks:

14.29 - 16.805 MHz
17.33 - 21.00 MHz
24.53 - 28.00 MHz (with 12 meter notch?)

Reception was somewhat difficult because of a high general noise level (what we usually refer to as "power line noise," ironically in this case. The true source of this particular noise is unknown). The BPL signature signals were generally strong and clear above this noise.

After observing what appeared to be an attempt to completely avoid amateur radio spectrum at the Woodchase trial area, I was disappointed to see that two busy amateur radio bands were

partially or fully covered here: 20 and 17 meters. The BPL carriers interfered with many signals as I tuned from 14.29 to the band-edge of 14.35 MHz in the 20 meter band. Strong signals were audible, but BPL carriers placed a loud "beat note" behind them, making reception irritating at best. Weaker signals were rendered unreadable.

I had the same situation across the entire 17 meter band, from 18.068 to 18.168 MHz. Weaker signals were impossible to receive, while stronger ones were accompanied by a loud heterodyne whistle.

I also tried listening to some shortwave broadcast signals in the spectrum immediately above the 20 meter ham band. Switching to AM reception with a 6 kHz band pass filter, I noticed that the BPL signals were a continuous "blanket" across the spectrum. Since the BPL carriers were 1.1 kHz apart, I heard the expected 1.1 kHz heterodyne tone as part of that interference blanket.

The 15 MHz signal from WWV was completely inaudible. Stronger shortwave signals were audible with varying degrees of interference. Weaker signals on 15.160, 15.205, 15.300, and 15.350 MHz were detectable but not readable. This was just a brief sample of the many shortwave signals that received interference from the BPL energy.

I could not observe any "residual" carriers spilling into the 15 meter ham band as the "power line noise" made it difficult to hear the weakest BPL carriers. With some difficulty I observed what appeared to be a notch in the 24.53 - 28.0 MHz block. The carriers were at least attenuated in the 24.89 - 24.99 MHz area (the 12 meter ham band), but I thought I could hear some weaker carriers through the "power line noise".

That is my report. I'll repeat my contention from my first complaint that interference reports from mobile stations are warranted because:

- amateur radio is a very mobile radio service,
- these are very limited trial areas, and the experience and results must be extrapolated to predict the effect BPL will have if widely deployed in densely populated areas.

I'll conclude with an example of truly random interference caused by BPL to a mobile ham who was not part of, or recruited by, our investigation team:

Over the past few weeks I've had an e-mail exchange with Andy Stoy K4MTN, from Wake Forest, NC. Initially, Andy's e-mail sounded like many that Tom Brown N4TAB, Frank Lynch W4FAL and I have received from area hams who suspect that they are hearing BPL interference from areas where none is known to exist. Andy said he had been hearing loud interference - he called it "static" - for months along a half-mile stretch of Falls of the Neuse Road near the Woodfield subdivision. He was describing the Phase I trial area which we believed to have been disconnected, and his description of "static" didn't sound like the BPL signature we're used to.

I pressed him for more specific details, and he finally described the exact location, and the signature sound (closer-spaced carriers with a clicking sound) of Amperion's BPL. Tom Brown traveled to the site and confirmed that the Phase I equipment was still operating on the overhead line along Falls of the Neuse Rd. Andy traveled that route daily, and regularly operates on the 10 meter band. He had been receiving interference and loss of communications on that stretch of road since at least last fall, but didn't know what caused the problem until we began publicizing the trials. Then he contacted us. He will be filing his own report of interference.

Andy's story may seem isolated, a rare, chance occurrence. It is significant for several reasons. One is that it happened at all, since there is a total of less than two miles of BPL coverage along Wake County highways. Another is that hams don't know what BPL is yet. We've reached a few with our message, but many more have never heard of it. So there may be a few more Andy Stoy's out there who have passed through the existing trials areas, received interference, and didn't know what it was or who to call.

I appreciate the fact that Progress Energy and Amperion are responding to our reports and complaints of interference. I'd prefer to just call them "reports," but public proclamations that

"there have been no interference complaints" have pushed us to this formal posture. My goal is to make you (Progress Energy and the FCC) aware of the real conditions for radio amateurs and other HF spectrum users in the trial area so that you can anticipate the level of difficulty you can expect in a broader implementation.

I'd expect that Progress Energy and Amperion could completely avoid amateur radio spectrum in the overhead segments of this limited trial area. I'm surprised that after the first complaints, you moved to occupy different amateur radio spectrum. But even if you had completely missed ham bands in this first move, success in this limited arena is not a good predictor of the ability to mitigate interference in a full system, where you will be constrained to use more spectrum and not re-use spectrum for several line segments. And the question of interference from the underground line segments has not been addressed at all.

Sincerely,

Gary Pearce KN4AQ

===== KN4AQ's March 13, 2004 complaint, for reference =====

I encountered all of this interference while mobile, or visiting the stations of other amateur radio operators. I do not hear any BPL interference at my home in Cary at this time.

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I also received interference with the same signature in several spots along Feldman Dr., in various other segments of the high-frequency spectrum - near 11 and 15 MHz in particular. The signals were weaker, but plainly audible. One caused a "beat note" against the 15 MHz WWV time and frequency reference signal.

I have subsequently been through this area several times, and the interference is still present. My last visit was on February 28th.

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Mike Payne KM4UT
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Raleigh, NC

Mike lives .7 miles south of the trial site on Holland Church Road. He is using a dipole antenna at about 30 feet. I observed that he was receiving a clear but weak BPL "signature" in the top half of the 10 meter band, above 28.8 MHz, and many smaller clusters of individual carriers in the band below that.

Ted Root N1UJ
509 WYNDHAM DR
Fuquay-Varina, NC

Ted is about a half mile southwest of the James Slaughter Road site. He is also using a dipole antenna at about 40 feet. He was receiving weak but clear BPL signature signals across the 25 and 28 MHz areas.

Roland Erickson WA0AFW
201 WILBON ROAD 301B
Fuquay-Varina, NC

Roland is about a half mile south of the James Slaughter Rd. site. He is using a dipole antenna in the attic of a retirement village building. He has a very high ambient noise level (S-6) across the 25 and 28 MHz bands, but was receiving the BPL signature signals clearly above that noise level across those bands.

You might ask if my complaint of interference while mobile, some distance from my home, is justified. I contend that it is, for several reasons.

First, amateur radio is a very "mobile" service. Tens of thousands of amateur radio operators have and use high frequency mobile equipment, and we can be found anywhere, using all hf bands, at completely unpredictable times.

Second, the Progress Energy Phase II trials are in very limited area tests. There are no amateur radio operators living inside the neighborhoods being served, though there are several within interference range - about a mile. We are justified in traveling to the sites with normal amateur radio equipment, operated in a normal manner, to observe and complain about interference we receive. This observation must be extrapolated to a wider geographic area to anticipate the kind of interference that would be received if BPL were to be widely deployed, especially in denser suburban and urban neighborhoods.

You might also ask if weak BPL signals constitute harmful interference. I contend that they do. Amateur radio operation is unlike most other radio operation, in that amateurs tune across their band segments looking for signals. Often we are looking for weak signals from distant parts of the world. Our predominant modes are single sideband and cw. In those modes, a series of carriers 1 kHz apart presents a most irritating series of "beat notes" - tones that vary in pitch as the spectrum is tuned. At 1 kHz spacing, they are continuously present in a receiver using customary bandwidth filters. And even weak BPL signals can make weak amateur radio signals difficult or impossible to receive.

The presence of any BPL signal of any strength at either a home or mobile station at any location is an unwarranted incursion in the amateur radio bands, and is also a problem for anyone tuning shortwave broadcast or other radio services.

Thanks for your consideration. I look forward to hearing the results of the investigation into my complaints.

Sincerely,

Gary Pearce KN4AQ

Gary Pearce KN4AQ editor, SERA Repeater Journal
Cary, NC www.sera.org
919-380-9944 kn4aq@sera.org
kn4aq@arrl.net
AOL/Yahoo Instant Messenger: KN4AQ
(send e-mail to be put on my "buddy list")

===== Original message =====

From: "Anthony, Len" <Len.S.Anthony@pgnmail.com>
To: James.Burtle@fcc.gov, kn4aq@arrl.net, flynch@nc.rr.com
Cc: "Oja, Matt" <matt.oja@pgnmail.com>,
"Godwin,
Bill" <bill.godwin@pgnmail.com>
Subject: Progress Energy Carolinas BPL Trial
Date: Tue, 20 Apr 2004 19:57:34 -0400

PEC has met with representatives of the ham radio operators in the Raleigh area. Joint measurements of the impact of PEC's BPL system on ham radio transmissions in and around the two subdivisions where BPL service is offered were taken. These measurements occurred subsequent to PEC modifying its BPL system to minimize interference with ham radio transmissions. These tests revealed a small level of interference at the fringes of certain frequencies. Since that time, further modifications have been made to address this fringe interference. It is PEC's position and interpretation of the FCC's rules with regard to "harmful interference" that any interference that may still exist is not "harmful" as that term is defined by the FCC's rules. This level of interference does not seriously degrade ham radio operation or transmissions or cause repeated interruptions. Importantly, since PEC can make modifications to completely eliminate any interference with fixed ham operators, the!

only impact of any kind upon ham operations is upon mobile operators. Given that any interference experienced by a mobile operator only occurs within close proximity to the BPL facilities, such interference would be very short lived. Thus, PEC is not causing any harmful interference and is in full compliance with the FCC's Part 15 rules.