

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

In the Matter of	)	
	)	
Digital Audio Broadcasting Systems	)	MM Docket No. 99-325
And Their Impact on the Terrestrial	)	
Radio Broadcast Service	)	

**Reply Comments of Edward Czelada, Consulting Engineer**

Based on the initial comments filed, the Commission should reject any blanket increase of the digital operating power using the in-band, on channel system (“IBOC”). The Commission must ensure that analog signals are protected, especially since a power increase will threaten the public interest due to interference to full-power analog channels and existing low power FM (“LPFM”) stations. Thus, the Commission should defer any increase in power until, at a minimum, the National Public Radio (“NPR”) study has been presented.

**I concur with the following comments:**

Comments of Barry D. McLarnon, P. Eng. (“McLarnon”) which can be found at this URL(s):  
[http://fjallfoss.fcc.gov/prod/ecfs/retrieve.cgi?native\\_or\\_pdf=pdf&id\\_document=6520222517](http://fjallfoss.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6520222517)  
and  
[http://fjallfoss.fcc.gov/prod/ecfs/retrieve.cgi?native\\_or\\_pdf=pdf&id\\_document=7019916559](http://fjallfoss.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=7019916559)

Comments of Jonathan Hardis, (“Hardis”) which can be found at this URL:  
[http://fjallfoss.fcc.gov/prod/ecfs/retrieve.cgi?native\\_or\\_pdf=pdf&id\\_document=7019808381](http://fjallfoss.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=7019808381)

Comments of Educational Information Corporation, licensee of “WCPE”, Raleigh, NC:  
[http://fjallfoss.fcc.gov/prod/ecfs/retrieve.cgi?native\\_or\\_pdf=pdf&id\\_document=7019808370](http://fjallfoss.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=7019808370)

**As the above commenters have noted, interference is now occurring now at the 1% level, the ten-fold (10x) increase could have devastating effects:. For instance:**

McLarnon states: *Nothing in the record supports the broad brush approach proposed by the Joint Parties. There is no headroom for any power increase in many cases. Clearly, this matter should only be dealt with on a case-by-case basis.*

WCPE Writes: *Even at 1% injection, IBOC is causing illegal, harmful interference according to this report. This casts a shadow over IBOC even as it is now if the NPR study is correct. Already, IBOC is causing illegal, harmful interference to analog FM reception. Therefore, according to the Act, IBOC may well be illegal at this current injection level as the requirement that "such use would not result in harmful interference among users" is not being met.*

**Why 10% is WAY too much for a blanket increase. For instance:**

McLarnon states: *Compared with the existing PR of 6 dB, this then represents a **shortfall of 9 dB**. This in turn shows that the current protection rules are inadequate to protect stations from FM IBOC on first adjacent channels, even **at the current 1% digital power levels**.*

Hardis states *Even the most casual observer of frequency allocations understands that factors of 10 in power are categorical differences, not small tweaks to adjust reception boundaries. A 500 watt station is fundamentally different than a 5,000 watt station, which in turn is fundamentally different than a 50,000 watt station. There is nothing in the record—not even the proponents' own test results—that justifies such a sledgehammer approach to swat a gnat.*

WCPE Writes: *A substantial number of early commentators have said that they are already experiencing digital-into-analog interference to their stations by IBOC at the 1% levels. This should be enough to put a halt to any immediate consideration of increasing the injection level, as we do not know if additional interference will be a linear or exponential function of IBOC levels -- but experience suggests it will be exponential. Read through the last set of comments and reply comments. Many stations are claiming interference from 1% IBOC. Has the FCC investigated any of these complaints? How can the staff consider moving forward without such investigation and resolutions? And are we not to consider these commentators' complaints "official" and worthy of resolution?*

**Loss of listeners at 10%:**

WCPE Writes: *Data from the previous NPR Labs "Digital Radio Coverage and Interference Analysis Research Project" dated 7/9/08, for IBOC at 10% injection states, "Mobile analog FM covered (protected) population would be reduced an average of 26% for the sample stations. Interference would affect some stations severely in portions of their analog mobile service area; 41% could lose one-third or more of their covered population and 18% would lose more than half of their population." The Report goes on to say: "Analog FM indoor and portable covered population totals are reduced by 22% and 6% respectively. Interference would affect some stations severely in portions of their analog indoor service area: 27% could lose one-third or more of their covered population and 16% could lose more than half of their population."*

McLarnon notes that there has been complaints to KVMR as one example. The KVMR examples note 212 documented cases of interference; this is at 1% levels See KVMR's comments to FCC:

[http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native\\_or\\_pdf=pdf&id\\_document=6520193407](http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6520193407)

Assuming this 212 is correct we should expect to KVMR to receive interference to thousands of people if the 10% level was used. This is clearly unacceptable.

**Potential Solutions:**

The only way I can live with this proposal is if it was done on a case-by-case non-interference basis using Longley-Rice methodologies:

For a first adjacent station operating in IBOC, the IBOC power component would be divided by two (only one set of the “sidebands”) and would be treated as co-channel for interference caused.

For a second adjacent station operating in IBOC, the IBOC power component would be divided by two (only one set of the “sidebands”) and would be treated as first adjacent for interference caused.

Alternatively, I would not oppose a letter of consent between adjacent frequency radio stations to go beyond 1% levels.

Even better yet, “deep six” this whole idea of ten-fold (10x) power increases.

**Respectfully submitted by:**

*Ed Czelada*

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July 17, 2009