Before the

Federal Communications Commission

Comments to NPRM 13-249

Filed by WGTO Larry Langford

Introduction

Larry Langford is owner and Chief Engineer of station WGTO, an AM station operating at 910 KHz with 1000 watts day and 35 watts night in Cassopolis Michigan (wgtoradio.com). WGTO uses translator W266BS on 101.1. WGTO has been in operation under the same ownership since its inception as WLLJ in 1989. Larry Langford has been involved in broadcast engineering since 1968.

Historic background

The move to revitalize the AM band is a welcomed endeavor by the FCC. Many ideas have been put forth for comment and I will attempt to draw upon my experience as an engineer and AM broadcaster to comment on these issues. Above all, the Commission must keep an open mind on these issues and realize that in order to improve AM which could also be read as “save” AM, some basic notions that have been in place for decades need to be reviewed and in some cases totally revamped. Any attempt at revitalization of AM must be done in a broad sweeping fashion and cannot be done as in the past with piecemeal efforts that sound good but lacked the oversight and regulation that the FCC is not only capable of but must execute for any plan

to be successful. For the benefit of those who are new or young in the business we must first look at previous attempts to revitalize the AM service and learn from the results of some of those efforts.

AM stereo was seen as a means to allow AM to compete with the FM service but failed because the Commission never took a stand on the method for broadcasting AM stereo. The decision to allow a market place standard proved to be a disaster. The Commission also refused to mandate any regulation that would have forced the manufacture of radios that would receive AM stereo at all.

The FCC also missed the chance to act with vigor on the issue of improved AM sound with the implementation of the NRSC pre-emphasis standard that was adopted by the Commission as a mandate for broadcasters with absolutely no new regulation for the makers of AM radios. Hence the standard meant nothing in that typical AM receiver performance has not changed much since the early 80's and only a fraction of the public has been able to enjoy the promised improvements of the NRSC standard .

Unlike AM, both FM and Television have enjoyed the benefits of the FCC's direct action to foster these media.

In the 1960's when the UHF TV band was authorized, UHF stations could be received on standard televisions with the use of a set top converter that provided a down-converted signal from UHF to channel 3 or 4. In its wisdom the Commission mandated that all TV receivers must

be manufactured with a full 83 channel tuner. This greatly enhanced the value of UHF TV and subsequent service to the public.

FM was also given a boost by the Commission when regulations were imposed that mandated that any FM receiver that sold for more than a specific retail cost MUST include FM stereo reception capability.

Despite these regulatory boosts for both UHF TV and FM stereo broadcasting, the Commission has never mandated even a minimal standard for the manufacture of AM receivers. This has caused a compound problem for AM broadcasters. In order to deal with increased noise, AM broadcasters have pushed the limit on modulation to the absolute maximum. But basic AM receiver design has only deteriorated in the last decades and the result is the typical AM receiver cannot handle dense high level negative modulation with the result being distortion that serves to make the AM experience less than optimum.

A similar situation exists with bandwidth. In the 40's the typical AM receiver could reproduce audio well past 7 kHz with a relatively wide IF response and gentle slope. As more and more stations were assigned to the band receivers appeared with tighter IF and steeper shoulders. With the introduction of ceramic filters manufactures started making the bandwidth even tighter and always claimed that consumer complaints of noise were the issue. Even today the average AM radio rolls off at 3 or 4 kHz negating any value of a pre- emphasis standard to 10 kHz.

Had the FCC mandated minimum AM performance standards many AM broadcasters would have been able to continue music programming with at least a respectable sound on a typical receiver. With most receivers being based on a single chipset, it would be easy to adopt any mandated changes in bandwidth and detector fidelity with respect to negative modulation. But the FCC has been silent on this point decade after decade.

It is hoped that this new and bold attempt to revitalize AM will implement many missed opportunities of the past into a comprehensive effort that will yield truly tangible results. With that said I will offer comments on the various proposals.

A. Open window for AM stations to obtain FM translators.

WGTO supports this proposal but offers the following input based on actual use of such a translator.

As I mentioned in my background remarks the FCC needs to rethink some basic positions in the effort to revitalize AM. The current translator regulations force AM stations to make a decision that balances commercial success with local impact. In the case of WGTO we are licensed to Cassopolis, Michigan a town of less than 3000 people but our prime coverage also includes

Dowagiac, Michigan a town of 6 thousand. Our 2 millivolt contour covers Niles, Michigan which has a population of over 20 thousand and lastly our secondary contour covers South Bend Indiana which is a rated market.

We chose to locate our translator on the WGTO tower. This provides great coverage of Cassopolis and Dowagiac but nothing in Niles. If we move the translator to Niles then we would have better commercial success but the translator could not be heard in our town of license. We are great believers in truly serving the city of license but this must be balanced with the need for commercial competition.

The FCC should look into allowing single frequency networks with low power translators to allow AM stations to better serve the populated areas now covered by their daytime contour. This is especially true of stations that operate as we do on regional channels. Otherwise the addition of the FM which serves to fill in areas close to the station but fails to cover at all those areas that are now well covered by the daytime AM signal will tend to hurt the overall effort.

While some AM stations will have the luxury of locating a translator on a tall tower and get superior results with the 250 watt limit, most AM stations will be limited to using their AM towers as support for the translator. Thus stations at the high end of the dial are often limited to tower height of less than 175 feet. This coupled with the fact that most AM installations are not on high ground but are normally located in low areas of elevation the resulting height above average terrain (HAAT) is very low and does not serve well as a location for FM when limited to 250 watts. We suggest the Commission allow a sliding standard for maximum power based on actual radiation center using the HAAT. This should not cause any negative impact

because the higher power would only be allowed on shorter towers in low elevations, but this would greatly improve impact and in-building coverage of the translator in the local market.

We agree that the translator should be forever tied to the license of the AM station that applied and was granted. There has been much abuse and trafficking of translators in the past and what amounts to straw applications have been well documented where the sole purpose was to get a CP that could be peddled for a profit with no intention of running the installation for the long term in the public interest.

Such abuse must not be allowed in this one time effort to provide some relief for AM stations.

In the case of WGTO we were able to purchase and move a translator operating in the reserved band to the non-reserved band. However because of current rules on what is major and minor change, we were forced to use a frequency of 101.1 which is less than desirable for our area due to existing translators and proximity to Chicago which has full service operation on 101.1 in analog and digital. In our rural area several frequencies would allow much more satisfactory operation but we are not allowed to move to those frequencies without a major filing window. We suggest that stations be allowed to move existing translators in a way that provides better use of spectrum and if necessary use local coordination as is done with microwave STL and UHF RPU channels.

Any situation that forces AM stations to be in an auction for available translator assignments must be avoided. It should be made clear that any auction process will result in deep pocket bidders obtaining these assignments and then reselling them to local AM stations at a price that may prohibit acquisition.

When WGTO purchased the translator we are now using we paid 55 thousand dollars for a translator that was operating in a town of 300 people with a power of 20 watts rebroadcasting a religious station a thousand miles away. While we were uncomfortable at that price, we found that later other AM stations were paying upwards of 150 thousand dollars for these translators that were merely place holders on the dial and mostly owned by one of two operators who were looking to cash in on the needs of AM operators. Under an auction these prices would skyrocket. Revitalization should not be based on the size of the station checkbook just to get on the playing field. One time AM ONLY filing window is essential!

The Commission asks for comment on any delineation between AM stations in the granting of assignments. We believe that stand alone stations, those that do not have a full power FM in the same market should be allowed preference. Further, we think that class C and D stations should be allowed a preference in that Class A stations in most markets are doing very well with the signals they now have. Or they are able to financially afford the outright purchase of a full power FM if they feel such a need. An example is WBBM in Chicago. When they felt that putting WBBM on FM was needed from a competitive need they simply converted one of their group owned stations and now simulcast on 780 and 105.9.

To be very clear, the rule change that allowed FM translators to be used on AM stations was the best thing that has happened for WGTO, however we are still faced with the situation that the major population center that listens to WGTO cannot get it on FM despite the addition of the translator. Engineering shows that we could still meet the regulation of 60 dB contour

within the 2 millivolt contour and cover the major population center with a new translator on the same frequency as our current translator. The installation would only need 50 watts at 120 feet which is not hard to achieve. We ask that the Commission give consideration to multiple low power installations to better serve the populated areas now within the stations 2 millivolt contour where the contour covers multiple cities. We know the Commission has been balancing the needs of the LPFM community with the desires of AM stations. In the case of our rural area in Southwest Michigan, not one LPFM application would impact our service area or diminish the available frequencies for use as a WGTO translator under the proposed window.

B Modify daytime coverage standards for existing AM stations.

We have no experience with this and offer no comment

C Nighttime city coverage no comment on minimum coverage area

D. Elimination of Ratchet Rule

WGTO agrees with many other commenters who have expressed the opinion that the ratchet rule has not served its original intent which was to reduce interference. It has merely made a bad situation worse. As an example WGTO operates 1000 watts day but only 35 watts night with the same pattern. When we were granted a CP to increase power to 5700 watts daytime with a slight change in pattern, we were required to DROP night power from 35 watts to 20. This makes no sense. The 35 watts was hard enough to hear and was not casing any harm to

any co channel station. So what was the point in reducing the night signal to 20 watts? The rule should be abolished.

E Increase use of MDCL

This could prove to be of use to higher power stations but has little or no potential impact on stations operating at fewer than 10000 watts, but for those who can benefit we agree that it should be allowed as accepted technology that is no longer experimental.

F. Modify antenna standards.

We believe the Commission should allow the station to use antennas that do not meet a minimum standard as long as the actual efficiency can be calculated to a degree of accuracy required for a proper showing. In FM installations the ERP is set and the licensee has many choices on how to get that ERP from the actual power out of the transmitter, size of transmission line to number of bays to be installed. AM operators on the other hand do not enjoy this flexibility and in the AM service such flexibility is needed more as tower height becomes the subject of local zoning issues. If the station wishes to use a low efficiency antenna and applied the necessary increased power to make it work then that should be an internal financial decision. As long as the proper amount of signal is delivered to the public the actual efficiency of the tower should not be set at any minimum. We think that roof top antennas should be allowed as they once were in decades past. In Chicago one AM station has always operated with a rooftop antenna and has since moved to another roof top which provides

excellent coverage as the building is in the heart of the city where open real-estate is at a premium for a tower and ground system on 950.

We do not think there would be any public impact on changing the minimum as long as the required power is applied to make up the loss. If the operator thinks they can be commercially viable with the higher cost of electricity balanced against the availability of the land and the antenna system then that is on the operator to make it work. You suggest a 25 percent reduction in the minimum. Why any minimum at all? If it takes a kilowatt to give the coverage that would have been obtained with 250 watts on a more efficient system why would the FCC object? It's transparent to the public and only the broadcaster would even know. The only caveat is the increased near field intensity of the system at higher power. That might serve as a source for more interference to domestic systems nearby.

What will be important is that the station shows the stability of the system so that we maintain a certain standard of construction and long term operation whatever the efficiency of the built system demonstrates. If it's low efficiency but stable and sturdy then efficiency is not the issue.

Other Thoughts

Sky wave protection/ night power

As I mentioned at the top of these comments the Commission needs to look at a basic change in thinking based on the changing social climate. At issue is the long standing protection of sky

wave coverage of full power stations mainly class A. Long past is the time when a sizable part of the population got entertainment and information via night sky wave. And while those of us over 60 remember the excitement of "pulling in" some distant station at night on tube radios with homemade loops or long wires, the general public has little desire or need to listen to fading stations that are not providing anything that cannot be picked up locally. If you speak to managers of Class A stations many will admit they do not program for or assume that a sky wave audience is even there. The Commission needs to weigh the needs of the many with the enjoyment of the few. We suggest and hope that some thought will be given to reducing or eliminating most of the night protection for distant high power stations because such protection restricts more important local listening.

We can assume the Commission would say that these protections are a basic premise of regulation. But the Commission has already set up a new deFacto standard that offers little or no sky wave protection. While this was not the intention of the Commission, the move to permit nighttime operation of hybrid digital known as IBOC has in effect destroyed the nighttime protection of many class A stations with no benefit to local listeners. For instance distant listeners of WCBS 880 50 kW in New York had their listening ability killed when WLS 890 50 kW Chicago was operating in hybrid mode. But WIRL 880 in Highland Illinois was still required to drop to 160 watts at night to protect WCBS. Why are we still demanding protection for sky wave operation when it is no longer a needed medium and the Commission has already allowed its destruction? We think it is more important that local operation be allowed. To this end we suggest that a blanket rule change be considered. Since the start of secondary nighttime authority in the late eighties, many stations have operated around the clock even

though they were originally set up as daytime only. WGTO was just such a station operating at a kilowatt during the day and ramping down to 250 watts in the first half hour after sunset and dropping to 35 watts in the second hour and remaining at that power until 6am when pre sunrise authority starts allowing 500 watts until sunrise. The practice of allowing 500 watts from 6am to sunrise for most stations was based on the idea that serving the local public in morning drive was more important that preserving early morning dark hours sky wave listening. We believe that the reasons for allowing pre sunrise operation are more intense now than ever before and to that end we think that a review of permissible night power is also needed.

IBOC operation is not the only thing making sky wave listening difficult if not impossible. The added noise that abounds in our environment now raises the noise floor so high that only the most diehard listeners will attempt to enjoy distant reception and those who are serious about it employ techniques that the average listener cannot or will not use such as shielded loop antennas, long wires or impulse noise filters on high quality communications grade receivers. We suggest the Commission at least look with an open mind to allow a more standardized night power for most if not all stations operating on secondary authority. For the same reasons the Commission adopted pre sunrise operation we feel the Commission should allow nighttime operation at the same power as first half hour post sunset. Or at the very least no less than second half hour power level. In the case of WGTO this would be 250 watts or 80 watts respectively; this would also erase any losses that were caused by some ratchet rule scenarios.

Modify modulation limits for AM.

Historically the limit for AM modulation has been stated as 100 percent negative. This is a fundamentally flawed statement since in reality what we want to do is approach 100 percent without actually hitting it**.** 100 percent is NO carrier and that means cutoff. That is nasty. It has been my experience that typical envelope detectors in the average radio do not do well with dense and high negative modulation levels.

In the early 60's this was not a problem as most AM stations operated with an average modulation level way below 100 percent with only occasional peaks. Modern processing has raised that average level to something very close to theoretical maximum and transmitter manufactures have beefed up designs over the years to accommodate that increase. Many will remember the advent of the Orban Optimod for AM, engineers were cautioned that the unit could cause stress and failure of the modulation section in older transmitters that could not handle the increased modulation density achieved with the Orban processing. Such is now the case with the typical AM receiver. The detectors cannot handle the ratio of average to peak negative modulation without audible distortion.

Older engineers who were raised on AM realized that limitation and some of the most listened to AM stations in years past actually limited negative peaks to less than 90 percent with no serious loss in perceived level because the compression and limiting was rather stout. Today engineers are in some cases running right at 100 percent negative and not understanding why the audio is fine on the monitor but less than pristine on the typical radio.

The Commission can and should mandate minimum standards for AM receivers but some improvement can be had even faster by changing the legal maximum for negative modulation to something less than 100 percent. As a starting point for discussion I would recommend that maximum negative modulation be held at 95 percent. At 95 percent you avoid problems associated with some Pulse Duration Modulation transmitters that tend to run away with what is called cliff effect when pushed with very dense negative peaks. Because of the limitations of most AM detectors there is NO loss in audio level from 100 percent to 95 percent because you are already in the soft clipping area caused by poor negative modulation acceptance. So on many cheap radios 95 percent will be just as loud but noticeably cleaner over the air. It should also be noted that most AM transmitters are cleaner at 95 percent. Check the specs on any modern day AM transmitter. Most will give noise and distortion measurement at 95 percent modulation. Most do not want to publish specs at 99 percent with a dense duty cycle.

At WGTO we run at 93 percent even though we use a modern day Nautel transmitter with excellent specs.

In summary...

Allow more flexibility in AM station operation of translators by allowing frequency shifts of more than three channels as a minor change. Consider local frequency coordination if required.

Consider an exemption for translator power of over 250 watts if the HAAT is unusually low due to mounting on an AM tower that is short and already in low elevation.

Remove ratchet rule as counterproductive.

Reduce or eliminate minimum efficiency for AM towers as long as stability and accuracy of actual measured efficiency is not compromised.

Allow class D stations to operate on first or second half hour night power all night.

Decrease or eliminate sky wave protection for Class A stations especially if reception has been lost due to night hybrid operation of adjacent channel stations.

Implement minimum receiver standards for AM radios sold in the United States to force reasonably flat bandwidth to 5 kHz with a maximum distortion specification for the detector section.

Limit AM transmitter modulation to 95 percent negative.