



# CHAPTER TWENTY NEWS

society of broadcast engineers  
pittsburgh chapter

June 2010

Volume 18 Number 3

### Next Meeting

Tuesday, June 8  
6:30 / 7:00 P.M.  
@ WPGH-TV53  
750 IvoryAve.,  
Pgh. 15214

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Next meeting presentation:

## LOUDNESS!!!

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This meeting will help to answer some of the questions surrounding the audio loudness issues of the digital television broadcast chain. The topic is a complicated one and subject to many variables, but there is a plan. As a backgrounder to the meeting, this overview will help set the stage for the presenters (see the full meeting notice below) and offer a guideline to the current issues and solutions.

The perceptual loudness of a television program has arguably long been an issue that broadcasters of all facets have dealt with. Interpretation of how loud is loud (compared to its surrounding program material) and what is defined as 'loud' are both part of the defining questions. Television programs are generally presented without a specification for loudness. Thus, channel changing and between program segments will vary, which in recent times has attracted the attention of not only the viewers, but now even the US Congress.

In December 2009, "a bill to regulate the volume of audio on commercials" was introduced to the Senate after passing the House (HR.1084 amended) earlier on December 15. The Commercial Advertisement Loudness Mitigation Act or the CALM Act (S.2847) would direct the Federal Communications Commission (FCC) to prescribe a regulation limiting the volume of television advertisements that is limited to incorporating by reference what would be known as ATSC document A/85 "Recommended Practice: Techniques for Establishing and Maintaining Audio Loudness for Digital Television" — insofar as such recommended practice concerns the transmission of commercial advertisements by a television broadcast station, cable operator, or other multichannel video programming distributor.

When the ATSC standards for digital television transmission and the coding practices for visual and aural program streams for over the air broadcast were adopted, many thought and hoped that this new emerging DTV technology would bring an end to the consistently inconsistent variations in audio levels between program segments, commercials and other interstitials. Unfortunately, that would not only

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*WPCB Master Control Supervisor, Armand Roberts, trains his operators to carefully check audio levels when ingesting program material.*

## ACM National Conference July 7-10 @ the Pittsburgh Hilton

We received a note recently from Jan Haughey of the Alliance for Community Media, who have extended an invitation to the members of SBE 20 and SMPTE to stop by the exhibition being held at the Pittsburgh Hilton as part of the annual international conference and exhibition of the Alliance for Community Media in July. The exhibition dates are Thursday, July 8, from 8 A.M. to 5 P.M. and Friday, July 9, from 8 A.M. to 1 P.M. Admission to the show floor is free. Exhibitors will include JVC, Panasonic, TelVue, Tigtrope Media Systems, Leightronix, Videssence, Broadcast Pix, Rushworks and others. The exhibit will provide a great opportunity for your members to spend some time with representatives from these fine companies and more. You can visit [www.alliancecm.org](http://www.alliancecm.org) <<http://www.alliancecm.org/>> for additional info.

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be a gross understatement - it would turn out to be dead wrong. Instead, due to many influences in the end-to-end production through transmission chain, audio has become an even more apparent problem than when it was in its previous FM-analog (and BTSC) domains.

Although many believed the parameters and practices of Dialog Normalization (dialnorm) would aid in controlling the differences in audio levels when referenced against the average levels of the program's dialog content, it would be many years later before the industry would take a concentrated look at how to measure and control the parameters as it relates to the entire broadcast chain. As the level of attention was elevated, the ATSC had already been diligently working to develop the A/85:2009, which was released on November 4, 2009, less than 30 days before the CALM bill would be introduced.

The background and introduction section of A/85 states: "Despite the conclusion of the DTV transition, many broadcasters and the production community have been slow to effectively adapt to the changes required to transition from analog NTSC audio techniques to contemporary digital audio practices. With digital television's expanded aural dynamic range (over 100 dB) comes the opportunity for excessive variation in content when DTV loudness is not managed properly." The A/85 document goes on to say "Consumers do not expect large changes in audio loudness from program to interstitials and from channel to channel. Inappropriate use of the available wide dynamic range has led to complaints from consumers and the need to keep their remote controls at hand to adjust the volume for their own listening comfort."

The AC-3 audio system employs metadata to control loudness and other audio parameters without having to permanently alter the dynamic range of the content. The concept was intended to alleviate the user having to continually adjust audio levels between channel changes or program segments. But here's the catch: loudness can be perceived differently depending upon the physical listening conditions, the speaker system reproducing the sound, the adjacent program's sound content and the dynamics of the overall program segment itself. Averaging these to produce a uniform condition that all listeners can appreciate, and thus not 'perceive' wide ranging changes in loudness is the challenge.

One of the steps necessary to controlling the loudness issue required determining the appropriate metrics of measurement. A new proficiency that could be applied uniformly to content suppliers, the broadcasters, the actual audience and the governing bodies was in order. A/85 provides the technical information that concerns the loudness measurement methodology, as described in the ITU-R BS.1770 recommendation defining the parameter LKFS (a unit equivalent to a decibel, K-weighted, relative to full scale, measured with equipment that implements the algorithm specified by ITU-R BS.1770) be employed.



Chairman's Corner

## Ruminations on NAB

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It's the annual "gathering of the clans" in Lost Wages ... I mean Las Vegas. I returned from a week of papers, walking, meeting old friends, learning ever more about 3D issues, and did I say walking? These gatherings are a bit odd. The papers are filled with good information, and of course manufacturers trumpeting their technology loudly. Probably hundreds of millions of dollars of hardware consuming tens of thousands of amps of power. All to make tiny data streams and illuminate LCDs. The exhibit floor is a "gentlemanly" demonstration of the best and worst of our business. Thousands of companies try to grab the spotlight, each saying what they offer is superior to their friendly neighbors. Of course that can't be true, though every year a few stand out products show strongly above a mundane and exhausting display of good and bad marketing. I nearly giggled at the iPad based prompters out only days after Apple began shipping. Telestream showed a marked improvement in usability in their new Vantage file conversion "workflow engine". It allows graphical representations of complicated workflow using analysis of file content (aspect ratio calculated from curtains and letterboxes, and loudness measured AND corrected). The first OLED viewfinder was interesting (Sony), and an OLED monitor for your rack room. How about a STUNNING reference monitor made by Dolby? It was just plain awesome! If you can say File Based Workflow there was every way possible to make, store, transcode, reuse, archive, repurpose, modify, measure, analyze, and maybe even play out files.

It was a year in which 3D was in nearly every booth. Like it or not we will be struggling to figure out the impact of 3D in everyone's business plans. Some of the gear was interesting, and some pointed out that this is still very much a science project. In their press conference Sony showed compelling 3D projected in 4K resolution. In the next room they had footage from the masters on consumer displays that was at best a negative sell on the technology. We'll have to find standards, and get acquisition products that don't look like erector sets. After struggling to get full HD resolution to the home the

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A/85 further identifies the target loudness for content exchange without metadata; the set up of reference monitoring environments (and considerations for multiple listening environments in the home); a means to control program-to-interstitial loudness; the uses of audio metadata during production, distribution and transmission; and how dynamic range control should be used in programs and interstitials (and at their boundaries) with AC-3 audio and contemporary ‘conventional’ means as an addition or alternative.

Of course, a logical question to the audio loudness issue might be, “Why can’t a compressor/limiter do the job of maintaining loudness?” Recall that this problem didn’t start with digital audio, it’s been around for decades. However, today it is more apparent due to the much wider dynamic range (versus analog), and finds itself with many more variables than during the days of only ‘over-the-air’ broadcast and cable rebroadcast.

Compressors and limiters are designed to compress the peak-to-average ratio of audio material (but not just for dialog), making it perceptibly louder, but without making an audio level meter indicate any higher value. Sophisticated digital audio processing has further helped to shape the impacts of perceptual loudness, but with multiple solutions on the market and various means to ‘control’ the audio level there may be additional complications that impact loudness such as the concatenation of audio processing schemes, the use of wide band vs. multiband or narrow band processors, and the addition of consumer electronics (CE) devices both on-board and external to the audio chain.

Modern equipment and methods have been introduced to assist in examining the problem, applying or altering the proper metadata, adjusting the program content to the proper level, and then evaluating the program for compliance. All of this may further become the CALM before the storm. Can or will the same issues face delivery of programs over the Internet, or via Internet capable television receivers? Will the programmers and content distributors be held accountable for properly controlling their content loudness parameters. Will the PC be facing the same concerns?

These topics, as well as the emerging tools and techniques that allow operators and engineers to maintain a consistent audio loudness between programs, commercials and promo materials will be discussed in our upcoming meeting on Tuesday, June 8.



*By the time programming reaches master control, the main audio concern of the engineers has been to keep the levels consistent with some kind of final leveling device.*

industry seems perfectly happy to transmit 3D in conventional base band equipment by sending 960x1080 images for each eye, half of the resolution of “real HD”. NASCAR in 3D? Coming soon to your set. 3D gaming consoles playing 3D movies to your set. 3D satellite aggregators. Everything but a 3D bagel. 3D for hospital operating rooms, and 3D for cell phones. No end is in sight.

ATSC-MH, the subject of a meeting this year for us, made a triumphant emergence. Products in the stores in June, content on the air now.

As usual I saw literally hundreds of friends from my four decades in this industry. Many of us look old and tired. Too many stuffed resume’s into my hands asking me to pass it to anyone hiring. The attendance at the show was up about 10%, but if that growth was at the expense of fewer employed it seems a sad commentary on our future. Every paper, every exhibit touted doing more with less (read labor). And FCC Commissioner Genachowski still wants to take spectrum away from broadcasters. Batten down the hatches, we’re not out of the recession yet and more danger is on the horizon.

SBE held their National Spring Meeting during NAB. Awards were passed out, including a lifetime achievement Award to Terrence M. Baun, CPBE, AMD, CBNT, Director of Engineering and operations for the Wisconsin Educational Communications Board, and former SBE President. If you know him please send congratulations.

SBE has other news. For those of you considering Certification, new SBE CertPreview™ is available (download or CD). The online address to order it is <https://www.sbe.org/certpreview/index.php>. The deadline to apply for the August Certification Exams is June 4th, but you have until

September 17th to apply for the November exam window. The slate of SBE national candidates has been announced with Vincent Lopex (WSYT in Syracuse) for President and Ralph Hogan (KJZZ-FM in Tempe) for VP. Lastly, John Poray, SBE Executive Director, announced this month that first quarter results showed cash from operations about \$40k ahead of budget due to better Certification revenue and reduced costs – GOOD JOB!



## LAST MEETING NOTES

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Last March 17th, NEP Broadcasting hosted and presented the SBE/SMPTE meeting on 3D developments in television. The meeting started with incoming SBE Chairman John Luff presenting the new SBE/SMPTE plans for meetings and presentations in the coming year. The regular, monthly meetings will be replaced by Ad Hoc meetings. These meeting will occur about 5 times this year, when quality presentations can be arranged with high value presenters. The idea is to have meetings only when a quality presentation can be scheduled. Newsletters will still be produced monthly and the SBE Yahoo Group and SBE20.org will provide the latest information on meeting date, time, locations and topic.

George Hoover, NEP's CTO presented a clear description of the long history of stereoscopic images, how digital 3D works today, and samples of NEP's experiments in 3D sports and event coverage. The spectacular images that were demonstrated came from the first 3D mobile truck in America, SS-3D. The NEP truck uses PACE 3D camera systems and the equipment and engineers from PACE were both very interesting. PACE was used in the making of Avatar. I spent about 15 minutes talking to the engineer from PACE and left with my head spinning. He said that's the way it is every day for him. "Were just figuring it out, each day, each event." It has been said; "3D is easy, good 3D is difficult". What makes today's digital 3D different is that it's live and intercut. Operators must make "vergence" (convergence and divergence) adjustments live, on the fly. You don't have the ability to "fix it in post" when you are doing live sports events. Because this was before NAB, some confidential information was unavailable, as NEP is working directly with certain manufacturers to develop 3D systems. Still, it was more information than many of us could manage. The SBE/SMPTE of Western PA owes many thanks to George and the entire staff at NEP Broadcasting for hosting, supplying refreshments and providing such an interesting meeting.

Over 70 people attended the meeting and this was the largest in my memory, for an SBE meeting. Clearly, 3D was of great interest to the production community, as well as everyone from the broadcasting and cable industry. Currently, 3D content is being delivered by cable networks like Discovery and ESPN and is only available via satellite and cable. At this time, I am not aware of any formal OTA delivery plans. This, however, is probably just a matter of time, since there is no fundamental issue that prevents OTA broadcast delivery.

The April 12-15 NAB showcased 3D in almost every booth. In fact, I remember walking by Canon's HD Theatre display and thinking; "that's so 2009", where's the 3D?" Panasonic and Sony are underwriting the additional costs to produce and deliver 3D to spur the sales of 3D TVs and Blu-Ray players. Panasonic showed a 50" Plasma display with active shutter glasses and a 3D Blu-Ray player, available today at Best Buy, for \$2,900.00. It's actually happening! Now, if the consumer equipment industry can find a way to encourage us to throw away that new 1080p HD TV and go out and buy a new 3D ready TV and Blu-Ray player ...we'll all be watching 3D with our glasses on, very soon! You can be sure you'll be hearing a lot more about 3D in the future. Already, 3D cameras have become simpler and cheaper.



*George Hoover of NEP gave the presentation on 3D.*



*John Luff ran the business portion of the meeting.*

# FCC PROPOSES CHANGES TO ANTENNA STRUCTURE MARKING, LIGHTING, AND REGISTRATION RULES



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**The Commission seeks comment** on various proposals to update and modernize its rules governing antenna structure registration, marking, and lighting rules. According to the agency, the changes will improve aviation safety while removing outdated requirements. To the extent that the new rules may require a greater level of precision in determining structure height and location, their implementation seems likely to trigger numerous corrective filings down the road. The NPRM was published in the Federal Register last Friday so comments are due on July 20th and reply comments are due August 19th.

**The FCC keeps tabs on antenna structures** via its registration process, which generally requires tower owners to register structures over 200 feet in height. The registration includes any marking and lighting requirements that may be imposed by the Federal Aviation Administration (FAA), and changes to structures, including painting and lighting requirements, require FAA and FCC approval.

**To summarize the key proposed changes:**

- References to obsolete FAA Advisory Circulars regarding painting and lighting requirements would be eliminated in light of the fact that each tower registration includes specific requirements.
- Any change in height of one foot or more or any change in coordinates of more than one second would require prior FAA and FCC approval, and the same level of accuracy would apply to structure owners' registrations using FCC Form 854.
- Comment is sought on whether to allow owners to use one of a number of surveying tools to obtain site data or to specify an approved survey method, such as GPS.
- FCC rules describing which antenna structures require notification to the FAA would be deleted and replaced with cross-references to pertinent FAA provisions.
- Quarterly monitoring and alarm system requirements would be reduced or eliminated for systems using advanced self-monitoring technology.
- Comment is sought on whether to implement a specific time limitation for lighting system repairs in lieu of the current requirement, which merely states that repairs should be

made "as soon as practicable" or "as soon as possible."

- Records of extinguishment or improper functioning of lights would be subject to a two-year retention requirement.
- Specific provisions are proposed regarding the use of the FAA's color chart to determine whether a structure requires painting.

**Related FAA Proceeding.** Finally, comment is sought on how the outcome of a pending FAA proceeding looking to expand the kinds of "construction" giving rise to FAA notification requirements (for example, to include construction of new facilities that operate in specified frequency bands, changes in authorized frequency, addition of new frequencies, increases in effective radiated power or antenna height above certain thresholds, and changes in antenna configuration for communications facilities that operate in specified radio frequency bands) could affect FCC registration requirements. The FCC suggests that it might follow the FAA's lead and require all instances in which a notice is required by the FAA to trigger an antenna structure registration or amendment of an existing registration with the FCC.



*Gary Stewart and Greg Abel met at the meeting and recollected how they started the Chapter 20 News in 1993. Greg typeset it in Microsoft Publisher v.1 and faxed it to Gary who copied it and sent it out. Prior to that, all we had were monthly meeting notices.*

Chapter Twenty News is published monthly (except July & August) by



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