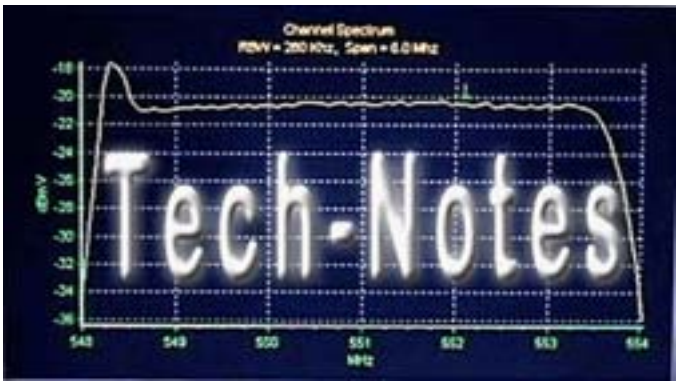


http://www.Tech-Notes.tv
March 25, 2005
Tech-Note – 129
First Edition: May 18, 1997

Our purpose, mission statement, this current edition, archived editions and other relative information is posted on our website.
This is YOUR forum!

Index

Note: All **Blue** underscored items in this PDF newsletter are working links.
(Click on the Link below to navigate to that section of Tech-Notes)

Editor's Comments

We live and work in an industry that continually lives by different sets of rules; or is it the regulators speak out of several sides of their mouths? It never ceases to amaze us how the FCC has one set of rules for over the air broadcasting, another for cable and another for satellite when it comes to program content. The point is that all of these services end up on the same or similar TV sets in our homes or where ever we indulge ourselves. Why then is it a very serious, highly finable offence for some material on over the air broadcasting, be it content or verbiage, and not if it is on cable or satellite? Had Ms. Jackson shown her femininity on a cable program or over a satellite show, it probably wouldn't have gotten a passing glance or nod.

We would like to think that we are more than just animals catering to our animal tendencies solely when it comes to entertaining ourselves. We tend to be partial to comedians that DO NOT resort to gutter language and four letter street talk to be funny.

The same is true of the programs we watch. It has always been our attitude that anything on the TV, radio or any other kind of entertainment is a guest in our home. We do not invite trash into our home! By the same token, there is always a channel select capability and an on/off button built into most every monitor, set and/or receiver. Beyond that, you do have the power to NOT purchase the sponsor's products, services or concepts while letting them know why you're abstaining from doing so. The best advice is what Jiminy Cricket once said: "Let your conscience be your guide."

That said, as engineers, it is our responsibility to deliver the finest quality product – audio and/or video – within the constraints of the equipment we are provided to work with so long as we take our employer's money. It is not our job to program the media in which we work, but there is nothing that says you MUST work for an organization that promotes and promulgates smut.

According to the New York Daily News, Congress is likely to pass the "Broadcast Indecency Enforcement Act of 2005" very soon. Performers groups like AFTRA and SAG, joined by trade groups like the National Association of Broadcasters and Recording Industry Association of America, say the bill at the very least fails to allow for crucial factors like context and intent. Then there is the ever failing issue of Congress once again trying to legislate morality.

Fred Upton's (R-Mich.) House bill would raise the ceiling on indecency fines from $32,500 per offense to $500,000. It would make individuals personally liable and contains a "three strikes" clause in which a station could lose its license for three violations.

The bill does not take into account the issue that during a newscaster on a live report a station could be fined half a million dollars if someone near the microphone uttered a profanity, that an artist could be liable for language in a song recorded 30 years ago and that performers could be held liable for scripted material that they read.

Opponents of the Upton bill see some hope in the Senate version, which also raises the ceiling on fines but does not extend liability to individuals. If both bills pass, as expected, the House and Senate would draft a compromise, which President Bush is expected to sign. All five members of the FCC -- three Republicans and two Democrats -- favor greatly increasing the fines.

As stated earlier, this isn't a level playing ground. It could make stations so conservative that they would be crippled in competing against unregulated media like cable and satellite. The White House said in a statement that it strongly supports legislation that "will make broadcast television and radio more suitable for family viewing." We ask the question of the White House: "Does that mean that Satellite and/or Cable shouldn't be suitable for family viewing?"

There is, however a light at the end of the level playing field tunnel. The chairman of the Senate Commerce Committee recently promised a showdown with the cable industry, vowing to bring it under the same indecency restrictions as broadcasters.

To worry cable even more, Sen. Ted Stevens (R-Alaska) said he'd also favor legislation that would require cable operators to carry several program streams from each digital-TV station as long as the channels provided "public-interest" programming such as news, weather and the "Boy and Girl Scouts."

"I think we can put restrictions on cable, and I intend to tell them that," Stevens said to an appreciative crowd of TV- and radio-station executives in Washington, D.C., for the National Association of Broadcasters' annual state leadership conference.

It's about time!

The Road Show - A Taste of NAB 2005

This year's Road Show is lining up quite nicely. As of this writing we've got nearly all our underwriters lined up (Twelve total) and NAB is less than a month away. Things will be a little different for us this year. Last year we did 48 venues and got home sometime in early September. Check out our itinerary: http://www.tech-notes.tv/2005/2005-2.htm. This year we've lined up 72 venues and won't be home for exactly six months; but as one person put it: "You love it and you know it!" How true.

Sharing the technology that was at NAB with those who couldn't make it is both fun and informative to us as well. We have the opportunity to meet and speak with some of the finest broadcast engineers in the world – and that's not BS either. It is difficult to say where the hospitality has been the greatest. This certainly inspires us to do the best possible job we can of letting all who attend our presentations know about the cutting edge technology in our industry. Remember: This is NOT a sales pitch: we are out there to educate and that we will do.

We have some returning sponsors who promise to have lots of new things to show you that they didn't have last year. We also have some new folks who's products and services are really outstanding and will do you well to become familiar with them. Check out who we've got so far: http://www.tech-notes.tv/2005/2005-1.htm

A few final thoughts: We're still lining up door prizes. If you know of anyone who'd like to help out in that area, pass it on. Also, don't forget that each venue has its own webpage and we'd like some pictures of legacy facilities/equipment in your area to post there. Also we'd like to speak with any local vendors who'd like to partner with us and provide some refreshments for those in attendance. – See you all soon!

Return to Index

News

First Public Demo of working Holographic Data Storage

By Larry Bloomfield, Tech-Notes editor

InPhase Technologies (www.inphase-tech.com), will conduct the first public demonstration of the world's first commercial prototype of a holographic data storage drive at NAB 2005. Demonstrations will be take place in Booth C8530, the Maxell Corp. booth, during NAB. Mark this as a MUST SEE!

The InPhase Tapestry™ prototype is a breakthrough in data storage. It is also the technology brought to engineers across the country for the first time during last year's Taste of NAB 2004 Road Show. InPhase will also be with the Taste of NAB 2005 Road Show this year, should you miss the big NAB convention in Las Vegas.

The InPhase Tapestry™ prototype will conclusively demonstrates the dawning of the next phase in digital recording and moves holographic storage from research to commercialization. InPhase will use five separate video clips to demonstrate recording and play-back functions for the prototype.

The prototype is the foundation for InPhase's family of Tapestry holographic drives, with data capacities that range from 300 GB to 1.6 TB on a single disk as compared to Blue Ray technology which maxes out at 100 GB. The completion of the prototype was enabled by InPhase's development of key recording techniques and holographic media, the commercial availability of critical components, strong partnerships with leading storage innovators, and government funding.

InPhase development partners include Hitachi Maxell, Ltd., which contributed to the development of the Tapestry media cartridge; ALPS Electric Co. Ltd., and Displaytech, Inc., which contributed to the development of key prototype components. Development funds were also provided by the Advanced Technology Program (ATP) of the National Institute of Standards and Technology (NIST) and the National Geospatial-Intelligence Agency's National Technology Alliance program (NTA).

If you are interested in possibly becoming a Beta site for this technology, please contact us here at Tech-Notes, at InPhase@Tech-Notes.TV with your contact information

Avid Technology, Inc. to Acquire Pinnacle Systems, Inc.

By Charlie Nullia, Tech-Notes Staff Writer

Avid Technology, Inc. (NASDAQ: AVID) and Pinnacle Systems, Inc. (NASDAQ: PCLE) announced earlier this week that Avid has entered into a definitive agreement to acquire Pinnacle in a cash and stock transaction. The acquisition is subject to satisfying a number of closing conditions, including shareholder and regulatory approvals, and is expected to close in the second or third quarter of 2005.

Following the closing, the parties expect that Pinnacle's professional products – such as the MediaStream broadcast playout server and the Deko on-air graphics system – will enhance Avid's end-to-end broadcast production pipeline. In addition, Pinnacle's consumer video business – which to date has shipped more than 10 million units -will form the basis for a new consumer video division at Avid, providing the company with an immediate avenue into that segment.

Avid president and CEO David Krall said, "We see this acquisition as the next logical step in our long-term strategy. Just as our acquisition of M-Audio in 2004 brought us into the consumer audio business, by acquiring Pinnacle's consumer video business, Avid will be able to tap into the next generation of video editors while they are still learning their craft. This creates a very large potential customer base for Avid's future. At the same time, we believe that Pinnacle's professional broadcast offerings will fit seamlessly with Avid's business, extending our end-to-end broadcast solutions with servers and on-air graphics products. We think it would be hard to find a more complementary match for these two businesses than what this combination provides."

Krall added: "As a result of this transaction, we expect to derive savings from a number of sources, including reducing public company expenses, combining infrastructure functions where appropriate, and providing our global sales teams with a broader portfolio of product offerings. Over the past five years, Avid has increased its profitability and shareholder value by growing our top line, expanding our gross margins, and leveraging our talent and technology across the entire company. By working with the dedicated team at Pinnacle, we're confident that, together, we can succeed with this same strategy following the completion of the transaction."

Pinnacle chairman and CEO Patti Hart said, "We believe that this transaction creates significant value for our shareholders and provides excellent opportunities for continued growth for the combined company. Avid has built a strong, well-deserved reputation for efficient business management while continuing to live up to its tradition of technological innovation in the video and audio industries. By bringing our own award-winning products to the table – including Pinnacle Studio, Pinnacle Liquid Edition, and our broad array of broadcast systems – we're confident that Pinnacle will strengthen and diversify Avid's business. Our customers can also anticipate a richer set of offerings within an

organization that will be even better positioned moving ahead. We see this as the right move for Pinnacle, and we look forward to joining the Avid family. ”

The Boards of Directors of both Avid and Pinnacle have approved the definitive agreement. Avid will seek stockholder approval of the transaction at its annual meeting, and Pinnacle will hold a special meeting of shareholders to consider approval of the transaction. The dates of the shareholder meetings will be announced following completion of initial regulatory filings.

NAB's Fritts plans exit

From several sources

The most visible face of the TV and radio business inside the National Capitol Beltway is calling it quits, as National Association of Broadcasters president and CEO Edward O. Fritts announced his retirement recently.

Fritts, 64, notified the NAB board of directors that it should begin the process of finding a successor, saying it would take some time to find a replacement for the high-profile job. His contract runs through April 2006.

Fritts' decision comes after years of turmoil inside the organization that saw the four major networks drop out of the organization and the government making several critical decisions against the industry. Many in the industry feel that Fritts' departure will likely heal the split. That would take a change in NAB policy.

Some issues that have faced Fritts are the House approving legislation raising the maximum indecency fine from $32,500 to $500,000; the FCC ruling that broadcasters do not deserve must-carry rights for their multicast digital signals; the decision on multicast, must-carry by the commission -- which often has been seen as an industry ally but became a serious blow to the TV business, and other issues that seem to be eating away at the over the air broadcast fiber.

"When I got to town, I found out very quickly that they use live ammunition," he said. "You lose one today, you win another tomorrow. There are no final victories." "Look, I came in when (then) Sen. Bob Packwood (R-Ore.) said that NAB couldn't lobby its way out of a wet paper bag," he said. "I took that as a personal challenge, and we built an incredible grass-roots organization that has been very effective on Capitol Hill and at the FCC."

Fritts and the organization might have been the victims of their own success. Over the years, NAB has proved to be a formidable foe. It has succeeded in thwarting attempts to take back the broadcast frequencies it uses and has often led the way in rolling back regulations it found onerous. NAB led the fight for must-carry and retransmission

consent rights that were included in the 1992 Cable Act -- the only veto by President Bush that was overridden -- and "local-to-local" legislation as part of the Satellite Home Improvement Act in 1999.

In 2003, it won crucial decisions at the FCC requiring both analog and digital tuners in new TVs and the "broadcast flag" copyright protection regime.

But it was an inter-industry fight over one of those regulations -- the old 35% audience-reach ceiling that effectively limits the number of TV stations one company can own -- that proved to be more than a little problematic.

Not having the networks and their owned-and-operated stations as members made it more difficult for Fritts and NAB to speak as an unified industry. Although much of NAB's power comes from having members that lawmakers need to secure their future in every congressional district and state, it also benefited from having the big corporate muscle the networks provided. When the networks left, it diminished that one-two punch.

Now replaced FCC chairman Michael Powell, who butted heads more than once with the NAB, praised Fritts. "Eddie's able leadership has served both the broadcast community and the public well," he said. "Although I will miss working with him, I continue to wish him all the best in his future endeavors."

The MGM DVD Lawsuit: Our Two Cents

From: Bill Hunt, Editor, The Digital Bits billhunt@thedigitalbits.com

Okay... we've been getting a lot of e-mails from readers concerned about this DVD lawsuit against MGM. There are apparently a lot of you now who are concerned that you may be getting ripped off by the studio when you buy their DVDs.

Relax. You're not.

A bit on the lawsuit itself: Two guys have apparently sued MGM and are inviting other consumers to benefit in a class action, which MGM has settled out of court. Their lawsuit (click here for the details on the suit from the law firm's case website) argues that:

"…certain representations on the label and package insert of MGM's widescreen DVDs are false and misleading because MGM's widescreen DVDs for films shot in the 1.85 to 1 aspect ratio have the same image width as MGM's standard screen format DVDs."

In other words, these guys seem to think they're getting ripped off because many of MGM's 1.85:1 widescreen DVDs are nothing more than the full frame image with the top and bottom cropped off.

Congratulations, guys... you've just discovered the obvious. In some cases, this is basically true. But guess what? Nobody is getting ripped off or otherwise cheated. MGM isn't involved in some massive conspiracy to cheat consumers. Wanna know why? Here's the deal: It's SUPPOSED to be that way.

Let us explain...

The 35mm Spherical Process

MOST widescreen films shown in theaters at the 1.85:1 aspect ratio are shot using a process called 35mm Spherical. What that means is that the physical film format is 35mm (which has an approximate aspect ratio of 1.33:1) and a "spherical" lens is mounted on the camera to capture the image being filmed without distortions. The result is basically a full frame image.

However, filmmakers using this process know that they ultimately intend the film to be presented in theaters in widescreen, at a 1.85:1 aspect ratio. They compose the image on the set for widescreen... but generally take care to make sure that microphones and other production equipment don't appear in the full frame image as well.

When the film is shown in theaters, a device in the projector called an aperture plate crops off the top and bottom of the full frame image, resulting in the 1.85:1 widescreen image the filmmaker intended you to see being projected on screen.

When the film is transferred to video and DVD for widescreen presentation (including anamorphic widescreen for 16x9 displays), this widescreen image intended by the filmmaker is carefully preserved.

BUT... when the film is transferred to video and DVD for full frame presentation (for display on regular 4x3 TVs), the entire film image, as shot in the camera, is commonly shown.

Why?

Well... one of the advantages of the 35mm Spherical process is that it's a good compromise - the filmmakers can carefully achieve exactly the widescreen theatrical presentation they're after, and at the same time, they can be sure that the full frame presentation meets at least some of their creative expectations as well. Most importantly, using this process generally avoids the studio having to use the dreaded "pan and scan"

process when creating full frame video transfers, where only part of the widescreen image is shown at any given time.

Some of you may have heard of the Super 35 process, which is favored by directors like James Cameron (he used it for Terminator 2: Judgment Day and Titanic). It works basically the same way. The captured image fills (or nearly fills) the entire frame of 35mm film, and it's then cropped for theatrical widescreen presentation.

Let's show you some examples of this.

[**Editor's Note:** *ALL of the DVD images displayed below are presented as viewed on a standard, 4x3 TV for simplicity's sake.*)

Below you can see comparative screen captures from both the full frame and widescreen DVD versions of Dead Man Walking, Raging Bull and Get Shorty, which are all titles specifically named in this lawsuit (click here for the complete list of titles in PDF format). All three films were shown in theaters at the 1.85:1 widescreen aspect ratio and were all shot using the 35mm Spherical process (the links take you to the technical details page for each film at the Internet Movie Database to confirm this).

On the left is the widescreen version. On the right is the full frame. We've added the yellow box on the full frame image to give you an idea of how the image was cropped on the top and bottom to create the widescreen version. BUT you should note here that the widescreen and full frame images are NOT exactly identical in terms of horizontal framing. This is most noticeable with the Dead Man Walking images, but they're ALL slightly different. It varies film to film, mostly for creative reasons (which, incidentally, would seem to invalidate the "same image width" argument of the lawsuit against MGM).

Dead Man Walking (1995)
Film Process: 35mm Spherical

Raging Bull (1980)
Film Process: 35mm Spherical

Get Shorty (1995)
Film Process: 35mm Spherical

In each of the above three cases, what you're seeing in both the widescreen and full frame DVD images is exactly what you're SUPPOSED to be seeing.

Just for kicks, here's another 1.85:1 title specifically named in the lawsuit - The Amityville Horror. These are screen shots from the full frame and widescreen DVDs. Both are framed as they're supposed to be. We've added the yellow box to show you what portion of the widescreen image you're seeing in the full frame image. As you can see, the horizontal framing of the two images is CLEARLY different (again, this would seem to invalidate the "same image width" part of the argument in this lawsuit).

The Amityville Horror (1979)
Film Process: 35mm ??

[**Editor's Note**: *Special thanks to Bits reader Tony T. for the Dead Man Walking, Raging Bull and Amityville Horror screen shots*.]

Hopefully, now you understand the 35mm Spherical process. You should also now understand that while the widescreen and full frame DVDs versions of a film can SEEM to have similar image widths, they often don't. And even if they do, that doesn't mean you're being cheated. That's how it's supposed to be.

Widescreen DVD Presentation

The bigger concern we have here at The Digital Bits (as film purists) is that we want to make sure MGM is giving us the correct widescreen presentation (as intended by the director) on DVD. So we decided to check MGM's work on that front too, by comparing MGM's work to that of other studios on the same title.

Below you can see comparative screen captures from the widescreen DVD versions of The Silence of the Lambs (released by both MGM and Criterion) and The Terminator (released by both MGM and Image Entertainment). Both are titles named in this classic action suit. Both films were shown in theaters at the 1.85:1 widescreen aspect ratio and were shot using the 35mm Spherical process (again, we've provided links to the technical details page for each film at the Internet Movie Database to confirm this).

On the left is MGM's widescreen presentation (in both cases). On the right is Criterion's widescreen presentation of Silence and Image's widescreen presentation of The Terminator. As you can see, while there are very subtle differences horizontally and vertically, the presentations are basically very similar in terms of framing.

The Silence of the Lambs (1991)
Film Process: 35mm Spherical

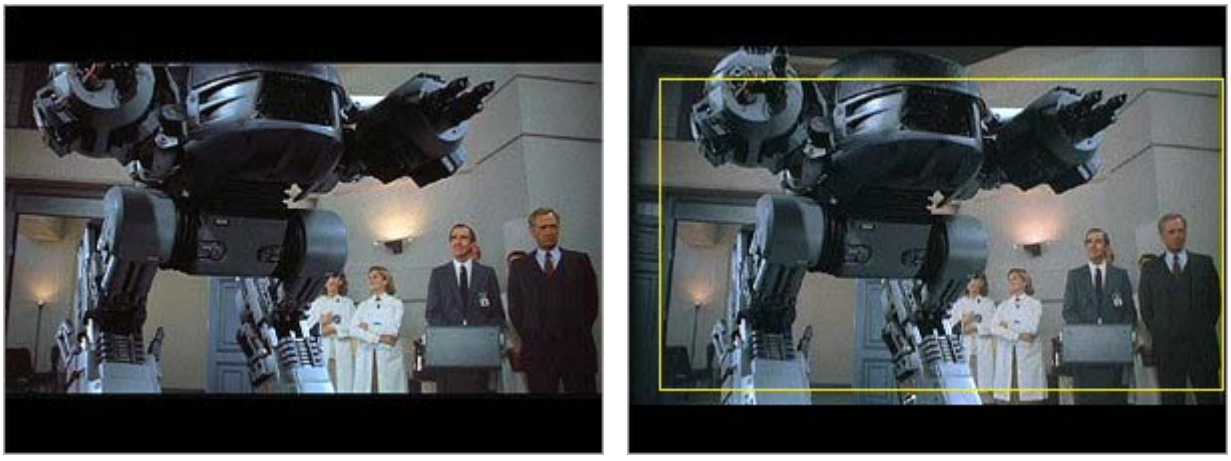

The Terminator (1984)
Film Process: 35mm Spherical


As we've noted, each film is a slightly different case. Here's another 1.85:1 title named in the lawsuit: This is Spinal Tap was filmed in 16mm and blown up to 35mm for 1.85:1 widescreen presentation in theaters. On the left is MGM's widescreen version, on the right is the previously released Criterion widescreen version. With only very subtle differences, both are basically framed identically.

This is Spinal Tap (1984)
Film Process: 16mm/35mm (blow-up)

Here's another unusual case: Robocop. This film was shown in theaters at 1.85:1 widescreen and was shot using the 35mm Spherical process. MGM's widescreen DVD version is on the left, while Criterion's previously released DVD version is on the right. As you can see, there are differences in framing both vertically and horizontally (we've added a yellow box to indicate this). MGM presents the film in 1.85:1 widescreen on DVD as it was shown in theaters (they accurately note this on the packaging with the words: "1.85:1 Theatrical release format"). Criterion, on the other hand, presented the entire 1.66:1 widescreen image captured on the set (via a hard matte in-camera) - there's slightly more image area on the top and bottom on the frame, and you see a little more on the left side as well. Criterion's DVD was released before the company was doing anamorphic widescreen transfers, so 1.66:1 was used at director Paul Verhoeven's request. MGM's transfer is anamorphic. Still, these differences aside, it's important to note that BOTH MGM and Criterion have presented the film "correctly".

Robocop (1987)
Film Process: 35mm Spherical (hard matte to 1.66:1 in-camera)



Okay, you should get the idea now. We've obviously only looked at a few examples, but near as we can determine MGM is doing a decent job of presenting its widescreen films on DVD.

Conclusions

We can't speak to every film on the MASSIVE list of titles that are specified in this lawsuit. We will say this however: There are plenty of films that just plain don't belong on this list. For example, some (like Bill & Ted's Excellent Adventure) are 2.35:1 aspect ratio films, not 1.85:1. Others (like Killer Klowns from Outer Space) have never been released on DVD in full frame - Klowns is only available in widescreen. And, to our knowledge, both Remo Williams and The Dark Half have ONLY been released on full frame on DVD. Why any of them (and there are likely others as well) should be named in this suit escapes us.

Keep in mind again that we're not going to speak to the plaintiffs' argument that "certain representations on the label and package insert of MGM's widescreen DVDs are false and misleading." To our thinking, MGM's DVD aspect ratio labeling has always been pretty clear, but that's just our opinion. Maybe the labeling IS occasionally technically slightly inaccurate or misleading (to those who don't understand the technical workings of film). This seems really to be the grounds upon which MGM agreed to the settlement.

Look... we're not lawyers, and we're certainly not making any legal claims. But people are NOT getting cheated here. And to make people think they are getting cheated, and to invite them to sue over it, seems to us to be something of an abuse of the legal system. Much like suing a restaurant because you got burned by their coffee which you apparently didn't know was supposed to be hot, despite the fact that it said "hot coffee" on the cup.

Anyway, we aren't talking about this here to support MGM, although from our vantage point this whole lawsuit seems pretty damn silly. We're doing it because there are a LOT of folks out there who don't fully understand the way films are shot and presented in theaters and on DVD. Given that, many people have heard about this lawsuit and suddenly started to believe that MGM has been cheating them, and that lots of their widescreen MGM DVDs are somehow defective.

Rest assured, folks... YOU ARE NOT BEING RIPPED OFF. Specific cases aside, to the best of our knowledge, MGM is giving you its 1.85:1 films on DVD in both widescreen and full frame correctly. So you can relax now. Breathe deeply and enjoy your discs with a light heart.

To quote some of the e-mails we've been getting lately: "Hey... these guys suing MGM have a point! The widescreen and full frame versions on some of my MGM DVDs ARE the same width!"

Yep... sometimes they are. But you still aren't getting cheated. Hopefully, we've put your minds at ease. That's what we're here for. ;-)

Can the FCC do that?

From: Declan McCullagh

A federal appeals court recently sharply questioned whether the Federal Communications Commission has the authority to ban certain types of digital TV receivers, including peripheral cards, starting in July.*

Two of the three judges on the District of Columbia Circuit panel said the FCC never received permission from Congress to undertake such a sweeping regulation, which is intended to encourage the purchase of digital TV receivers that curb Internet distribution of over-the-air broadcasts of programming such as movies and sports.

In November 2003, the FCC said that every product sold in the United States after July 2005 that can receive digital TV broadcasts or digital TV streams must be able to recognize a "broadcast flag." Such products--ranging from TV sets to computer tuners made by Elgato Systems and Hauppauge Computer Works are permitted to deliver high-quality digital output only to devices that also adhere to the broadcast flag specification.

The groups challenging the FCC's broadcast flag regulation include the American Library Association, the Association of Research Libraries, the Medical Library Association, Public Knowledge and the Electronic Frontier Foundation. They argue that the FCC exceeded its authority, that Congress should be responsible for making copyright law, and that librarians' ability to make "fair use" of digital broadcasts will be unreasonably curtailed.

But one of the judges, Sentelle, suggested that the library and other nonprofit groups challenging the FCC's rule would not suffer the kind of particular harm necessary to allow the case to proceed.

"You have to have a harm that distinguishes you from the public at large," Sentelle said during oral arguments. "If there is not a particularized harm, you do not have standing...There may be someone from the industry who can come forward." Edwards also said he was concerned about the groups' "standing," referring to the judicially recognized right to sue. Special rules exist for organizations suing federal agencies.

From the perspective of the entertainment industry, the broadcast flag is needed to encourage over-the-air distribution of valuable content. Without the FCC's action, the Motion Picture Association of America has argued, the threat of Internet piracy would imperil the future of digital TV.

For more, visit: http://news.zdnet.com/2100-9588_22-5585533.html

White House Seeks to Speed DTV Switch

From: Bill McConnell of Broadcasting & Cable

President Bush has ordered the Commerce Department to establish a private-sector advisory committee to help the federal government keep the digital-TV transition on track and to resolve other tricky telecommunications issues, such as promoting nationwide, affordable access to high-speed Internet service.

The White House dictate was included in a Spectrum Policy Initiative. Formation of the committee was among the recommendations suggested in a two-part report issued by the Commerce Department last June.

Although the FCC has said it will be hard to complete the switch to all-digital TV before 2009, the White House still insists that the Commerce Department's National Telecommunications and Information Administration try to wrap it up by Dec. 31, 2006, the government's target date for reclaiming old analog channels. (Few expect that date to be met because stations aren't required to give up the channels until 85% of their markets are equipped to receive digital programming, which could take many more years to reach.) The reclaimed channels will be doled out, in part, to local fire, police and other public-safety departments.

To facilitate that transfer, the White House also asked the FCC to consider requiring stations to participate in a voluntary coordination system, also known as CAPRAD, which is administered by the National Institute of Justice.

Rep. Fred Upton (R-Mich.), chairman of the House Telecommunications Subcommittee, applauds the White House proposals. "President Bush's spectrum initiative is exactly the right prescription at the right time for our nation," he says. "It is essential that we have the proper spectrum-management plans and policies in place for our economic well-being and so that we can continue to see further growth and development of wireless technologies."

Ed Williams to be Editor-in-Chief 10th Edition - NAB Engineering Handbook

Long time Tech-Notes friend and contributor and Galactic Tycoon in the Order of the Iron Test Pattern, Ed Williams has been selected to be the Editor-in-Chief of the new 10th Edition of the NAB Engineering

Handbook. Williams has 45 years of experience in broadcast engineering having worked at local stations, the PBS Network, NAB, and the Advanced Television Test Center. His major contributions to the industry include working on the development of the first satellite TV network distribution system, captions for the deaf, stereo audio for TV, formal advanced television laboratory and field tests, the nationwide 40-city Harris/PBS DTV Express demonstration and seminar tour, implementation of DTV for public TV stations, and standards development. His professional affiliations include membership of the AFCCE, ATSC committees, IEEE, SBE, SCTE, a fellow of SMPTE and Galactic Tycoon in the Order of the Iron Test Pattern.

Recently retired from PBS, Williams continues to be involved in many aspects of digital broadcast engineering, standards development, and technical seminars. Working closely with Williams on the Handbook are section editors Graham Jones, Director, Communications Engineering, NAB; David H. Layer, Director, Advanced Engineering, NAB; and Thomas G. Osenkowsky, Radio Engineering Consultant.

If you have relevant knowledge and experience that you are willing to share, NAB is offering an opportunity for you to participate in this premiere publication as a contributing author. As an author, you will not only be part of the most respected industry engineering volume, but your contribution will be individually acknowledged in the book and supporting promotions.

The NAB Engineering Handbook has been the industry standard by which other reference books are measured, with contributions from recognizable industry experts. Already the most comprehensive reference source for broadcast engineers, the 10th Edition will contain completely new sections encompassing advanced radio and television, digital audio, video, and data technologies, with emphasis on practical information for working broadcast engineers. It will be a MUST for any engineer's library.

If you are interested or have questions, contact Ed Williams at handbookeditor@nab.org

(Editor's note: If you are a survivor in the broadcast industry, visit the Order of the Iron Test Pattern website at: www.OITP.org.

Broadcasters File Media Ownership Appeal at Supreme Court

While the Federal Communications Commission won't pursue a Supreme Court review of an earlier court decision on media ownership rules, broadcasters will push for a high court ruling.

The National Association of Broadcasters on Monday filed an appeal with the Supreme Court related to FCC

media ownership rules. Last week, the Bush administration decided not to challenge an appeals court decision on those FCC media ownership rules that sent most of the broadcast ownership rules, some of which have gone into effect, back to the agency for a re-write.

The NAB Supreme Court filing asks the court whether the FCC's changes in the local radio ownership rules, leading to a substantial reduction in the number of local radio stations that may be commonly owned and transferred, violates part of the 1996 Telecommunications Act. The filing also asks whether the FCC violated the act when it retained severe restrictions on local TV station ownership.

South Atlantic Anomaly Creates Satellite Danger Zone

From: RF Report

There is an area in the South Atlantic where satellites experience electrical problems and astronauts see flashes in their eyes during periods of high solar activity. The effect is called the "South Atlantic Anomaly." At present, the danger zone for satellites covers Brazil and the South Atlantic, but it is growing wider towards the southern Indian Ocean. Scientists have found the Earth's magnetic field is growing weaker at an astonishing rate and some believe the magnet field may disappear completely in a thousand years or so, perhaps due to a swap between the north and south magnet poles, as has happened before in Earth's long history.

The South Atlantic Anomaly is one of the reasons scientists are taking a closer look at Earth's magnetism. The European Space Agency (ESA) has summarized the planned research in the article Focus on our magnetic planet. The article describes the ESA "Swarm" project, which will use three satellites to measure the Earth's magnetic field and its variations more accurately than any previous measurements. The Swarm satellites are planned to be operational by 2009 and last until 2013, which should catch the next peak in solar activity.

Nils Olsen at the Danish National Space Center in Copenhagen explained his interest in the Swarm project, "What excites us is the huge scope of what we can study even with quite small satellites. By making magnetic measurements in space we get new information about the Earth, from the molten core deep under our feet, through the mantle, to the crust on which we live. And then we go on upwards into the upper atmosphere, through the planet's local space environment, and all the way to the Sun itself, which is the source of daily magnetic disturbances."

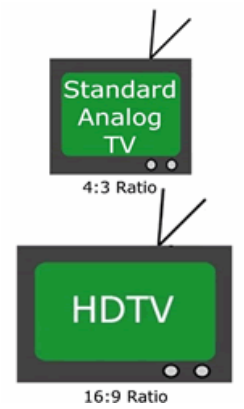
The Swarm project will have practical benefits. Solar storms can destroy satellites. While the impact of radiation on satellite systems is well understood, a new danger has been discovered. "The atmosphere inflates and low-orbiting spacecraft run into unexpected air resistance. Experts used to think it was just a matter of the air being heated by particles

and electric currents in the regions around the poles, where auroras occur. Now a sensitive French-built accelerometer on the German CHAMP satellite has revealed heating by intense currents where the solar wind pushes towards the magnetic poles in daytime," noted the ESA article. The Swarm satellites include accelerometers and will investigate this effect.

ESA's Focus on our magnetic planet describes other research. Please read it for additional information on this topic. .For current solar/geomagnetic conditions, visit:
www.spaceweather.com.

Surveys: The Public Doesn't Care About HDTV

In his column in TV Technology , the Masked Engineer Mario Orazio cites figures from some recent studies to support his contention that much of the public does not really care about HDTV. For example, in one survey of 750 households, 43 percent said that they would "probably" never buy another ordinary TV.



Mario points out that, two years before Congress wants to shut down NTSC broadcasting, less than half of the households surveyed stated that they would probably not buy another NTSC set. He further mentions that the CEA reported last November that 60 percent of 2004 factory sales of plasma sets were non-HDTV, while according to the same report, 70 percent of 2003 plasma factory sales were HDTV sets. Finally, he cites a November study by Lichtman Research. "While 65 percent of HDTV owners report that they are receiving HD programming from their cable or satellite TV company, industry analysis reveals that the true figure is about half of that total," according to the study. Conclusions are left to the reader.

Return to Index

DTV Stations Authorized To Be On The Air as of February 3, 2005

CATEGORY	# DTV STATIONS ON AIR	# DTV CHANNELS	% ON THE AIR	WITH LICENSED FACILITY OR PROGRAM TESTS	WITH STAs
TOP 30 MARKETS NET AFFIL.	119	119	100%	110	9
OTHER COMMER.*	1057	1230	86%	361	696
NC EDU.**	312	373	83.6%	210	102
TOTAL	1488	1722***	86.4%	681	807

* May 1, 2002 Build Out Deadline
** May 1, 2003 Build Out Deadline
*** This new total (1722) includes single-channel DTV operations

Make LPFM a Primary Service, FCC Is Told

Several low-power FM proponents told the FCC they want LPFM to be considered a primary service, so that those stations can't be bumped off the air when a full-power station moves or raises its power level.

Also, although FM translators are licensed as secondary services, LPFM proponents feel their services should take precedence over those, because low-power FMs originate programming. The issue arose at an FCC hearing on LPFM Tuesday.

LPFM operators also want CPs to be extended to three years instead of 18 months. They said the current time allotment isn't enough time for grassroots organizations to build stations, LPFM station employees testified.

Other suggestions were made for making it easier for non-profits to obtain a license and manage an LPFM.

"Now that we have a seat at the table, we'd like a slice of the pie," said Michael Shay, project manager for WRYR(LP) in Sherwood, Md. He and other LPFM supporters said the stations now serve as training grounds for radio talent, practice program and employee diversity and are proving they can operate within FCC rules.

Commissioners who attended the hearing gave assurances the subject would remain an agency priority. FCC Chairman Michael Powell said, "At the commission, we need to

continue our efforts" with regard to LPFM. He assured attendees he is personally overseeing the agency's next step regarding LPFM.

The Media Bureau is working on a Notice of Reconsideration and a Further Notice. FCC Media Bureau Chief Ken Ferree said the agency looks forward to receiving comments on the items when they're released. Agency staffers were not prepared to discuss what might be in the next LPFM items or when they might be ready, except to say "soon."

Society of Motion Picture and Television Engineers (SMPTE) Announces new slate of officers

President -Edward P. Hobson II

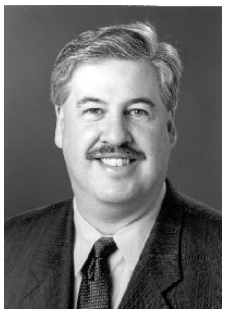
Edward Hobson, Vice-President, National TeleConsultants, Inc, has more than 30 years of experience in broadcasting and is currently vice-president at National Tele-Consultants. Prior to joining NTC, he worked in field engineering, sales, and marketing roles at the Grass Valley Group in New York, London, and Nevada City, CA. He is a founder of Omneon Video Networks. Hobson currently serves as Editorial Vice-President of SMPTE and has also served as Governor and Conference Vice-President of the Society. He is also a SMPTE Fellow.

As president of SMPTE, Hobson's plans to continue strengthening the Society, as started by the current president. He also plans to improve the Society's financial stability and increase both membership and the services to members worldwide.

Executive Vice-President - Robert Kisor Vice-President, Engineering and Technical Services, Paramount Pictures

In his 14 years at Paramount, Robert Kisor has been responsible for planning, designing, and maintaining the video production, post-production, and distribution facilities at the studio. Prior to joining Paramount, Kisor spent 17 years in the engineering and development department at CBS.

Editorial Vice-President - Peter Ludé



Peter Ludé, Senior Vice-President, Solutions, Sony, has been involved in broadcast engineering and production for over 25 years. Prior to his current position at Sony, Ludé worked as senior vice-president, Sony Broadcast, where he was responsible for system integration, software development, and system marketing operations. Ludé was also the CTO of iBlast, responsible for implementing nationwide ATSC

datacasting network. He has extensive experience in broadcast system design, including HDETV edit and product, 24F mastering, digital cable, and DBS.

Secretary/Treasurer - Clyde D. Smith

Senior Vice-President, Turner Broadcasting System Inc.

As senior vice-president of broadcast engineering, research and development, quality assurance, and metrics for Turner Broadcasting System, Inc., Clyde Smith oversees strategic technology planning and the operational supervision of broadcast and production technology operations, including 23 of Turner's entertainment networks and 16 cable and satellite networks for CNN worldwide. He is credited with launching Cartoon Brazil, the first all-digital video server-based, all-automated network whose design became the prototype for international feeds for automation conversion throughout the entertainment industry.

Smith was awarded a 2003 Engineering Emmy for his work in development of automated, server-based closed captioning systems, and was also recognized as a 2003 Laureate by the Computer World's Honors program.

Broadcasters Hit On DTV Transition

Speakers at the Consumer Electronics Association's (CEA) 10th HDTV Summit, held here recently, took the broadcasting industry to task for failing to join with other industries in seeking a hard cutoff date for analog television broadcasting.

"The real issue is not the broadcast industry," said David Donovan, MSTV's president. "The real issue is the consumer. When we started this process back with the FCC, the goal was to ease the consumer in the shift from analog to digital. Over the years things have shifted. Now it appears the top priority is spectrum reclamation, which understandably is an important goal. But if you are going to make that a top priority what you are going to have to do is deal with the consumer and make that transition easier."

Arguing on behalf of a hard cutoff date, Rhett Dawson, Information Technology Council's president, said, "Nothing focuses the mind like the hangman's noose or a date certain. If you give us a date certain, I think things will become much more clear, and technology will be able to have a slingshot effect into the new changing world."

House Committee on Energy and Commerce's chairman Rep. Joe Barton (R-Texas) joined with Subcommittee on Telecommunications and the Internet's chairman Rep. Fred

Upton (R-Mich.) in vowing to draft this session legislation to impose a hard analog cutoff date.

Barton said many businesses from multiple industries, except the broadcast industry, "want certainty" on the cutoff date rather than merely waiting until 85 percent of Americans have digital television sets.

Barton said he understands that broadcasters want to maintain the value they offer by providing both analog and digital services, "but just because it's a good value doesn't mean it's good public policy," he said.

Barton added that his preferences for the bill are to have a Dec. 31, 2006, hard cutoff date, omit multicast must carry, and have a means test for low-income citizens to qualify for "a rebate" to reimburse them for the purchase of a digital to analog converter box. The bill would count all digital cable and satellite households as DTV households.

Barton estimated the reimbursement would affect between 8 million and 10 million households and would cost between $400 million and $500 million.

"If you auction the spectrum for $5 billion to $17 billion, you can afford to pay $400 million or $500 million to make this conversion," he said.

Also calling for a Dec. 31, 2006, cutoff date was U.S. Sen. John McCain (R-Ariz.).

"It remains clear to me that now is the time act to expedite the completion of this transition," said McCain, who was awarded the 2004 DTV Government Leadership Award by the Academy of Digital Television Pioneers, during the summit proceedings.

"We need to take care of Americans with fixed incomes as we undertake this transition," said McCain. "I pledge to continue to work on behalf of the over-the-air viewers to ensure that no viewers are left behind."

Sen. John Ensign (R-Nev.), chairman of the subcommittee on Technology, Innovation and Competitiveness, urged the audience to contact their legislators to support the forthcoming hard-date legislation, adding that any senators contacted should be reminded to make sure the bill stays clean of any "poison pill" pork-barrel riders that might threaten its acceptance.

Meanwhile, former Federal Communications Commission (FCC) chairman Dick Wiley cautioned against arriving at a cut-off date too quickly.

"We can't just pluck these dates out of the air," Wiley said during a breakfast speech at the Summit. "We can't be precipitous or cavalier. We have to get a date that makes sense, and it has to end the transition in a

way that serves not just political and budgetary considerations, but serves technology, the marketplace" and the viewing public.

Wiley suggested that by issuing a date far enough in advance, manufacturers would have time to produce an ample supply of affordable digital-to-analog conversion devices to meet the needs of consumers faced with losing programming. He later suggested a firm cutoff date of 2009 or 2010.

On another pending DTV topic, CEA's president/CEO Gary Shapiro reminded the audience that the FCC is soon scheduled to decide on the CEA's request to adjust the next phase of the DTV tuner mandate to require all television sets with screen sizes 25 inches to 35 inches to have ATSC tuners by March 1, 2006. Currently, 50 percent of all such TVs are to have tuners by July 1, growing to 100 percent by July 1, 2006.

"If the FCC grants this petition, we believe it will allow for us to sell an additional 3.3 million integrated DTV sets this year, as manufacturers work toward that accelerated 100 percent threshold," Shapiro said.

Saying the digital television transition is now "well past the tipping point," Shapiro released the following CEA market forecasts:

- More than 3 million households have an ATSC tuner, growing to 16 million units by the end of the year, according to CEA market research.
- Seventy-one percent of consumers who were thinking about buying a new TV are planning to purchase a digital cable-ready set.
- In 2004 the industry sold 1 million digital-cable-ready DTV sets, and the CEA forecasts that to triple in 2005.
- The CEA said that more 16.5 million digital television products have been sold since the DTV launch in 1998, representing almost $26 billion in cumulative revenues and means the consumer investment in digital television is more than $30 million.
- CEA market research predicts 20.2 million DTV products will be sold in 2005.
- This year consumers will buy more digital televisions than analog televisions, for the first time.

The Digital Television Academy presented its 2004 Academy of Digital Television Pioneers Awards during the Consumer Electronics Association's tenth-annual HDTV Summit, held recently at the Washington D.C. Convention Center.

The awards, presented during a luncheon honoring the DTV Academy, recognized achievements made throughout 2004 in 10 categories:

- Best DTV Over the Air Network : CBS
- Best DTV Cable System : Comcast

- Best DTV Cable or Satellite Service : DirecTV
- Best DTV Satellite Programmer : ESPN
- Best DTV Sporting Event : CBS, for Super Bowl XXXVIII
- Best Original DTV Material : (tie) CBS, for CSI, and ESPN, for HD Sport Center
- Best DTV Journalism : HDTV Insider
- Best Industry DTV Leadership : Peter Fannon, Panasonic Corporation of North America
- Best Government DTV Leadership : Sen. John McCain
- Best Retail DTV Leadership : Best Buy

The annual DTV Awards are independently voted on and bestowed by the DTV Academy - a select group of 203 individuals who have played a significant role in the decade-long effort to make digital television a reality for consumers. The DTV Academy represents excellence in all aspects of digital content development and delivery, analog-to-digital transition leadership and the manufacture of high-definition television (HDTV) products. More than half of the 203 DTV Academy members are individuals outside the consumer electronics industry.

(**Editor's Note**: ***Where are the engineering and technical awards? Were it not for the contributions by those disciplines, none of the rest of this would have happened!***)

SMPTE Requests Information on Sources of Lip Sync Errors, Measurement, and Correction

There is an increasing awareness, both in broadcasting engineering circles and in the viewing audience that audio-video synchronization errors in broadcasting, usually seen as problems with lip-sync, are occurring more frequently than they used to and often with greater magnitude. The Society of Motion Picture and Television Engineers S22 Committee on Television Systems Technology has formed an Ad Hoc Group on Lip Sync Issues to review all aspects of this problem and make recommendations for solutions.

SMPTE is therefore issuing this Request for Information from interested companies or individuals, particularly relating to the following areas:

- Sources of differential audio-video delay in television production, post-production, and distribution

- Audio-video delay issues through professional MPEG encoding and decoding systems
- Differential audio-video delay arising in consumer receiver, decoding, and display devices
- Out-of-service methods of measuring differential audio-video delay
- In-service (during program) methods of measuring differential audio-video delay
- Devices for correcting differential audio-video delay at different points in the broadcast chain

It is noted that there is an ATSC Implementation Subcommittee Finding: "Relative Timing of Sound and Vision for Broadcast Operations" (see http://www.atsc.org/standards/is_191.pdf). There is also an ITU recommendation: ITU-R BT.1359-1, "Relative Timing of Sound and Vision for Broadcasting" (available from http://www.itu.int/publications/bookshop/index.html). These references are provided for information only and it is noted that some broadcasters have adopted target tolerances for synchronization errors that are smaller than those indicated by the ATSC and ITU.

SMPTE is particularly interested to hear from manufacturers with practical solutions or proposals for measurement and correction of audio-video synchronization errors, and those willing to participate in development of related standards. Responses should be sent in the first instance, and as soon as possible, to the ad hoc group chair, Graham Jones of NAB at:

Email: gjones@nab.org
Tel: 202-429 5345
Mail: NAB 1771 N Street, NW Washington, DC 20036

ATSC/NAB "DTV HOT SPOT" AT NAB2005

The Advanced Television Systems Committee (ATSC) and the National Association of Broadcasters (NAB) take you full speed ahead to the hottest technologies on the DTV horizon at the "DTV Hot Spot: A Digital Paradise" at NAB2005, April 16 - 21 in Las Vegas, Nevada.

"We are pleased to work with the ATSC to highlight the advancement of standards and technologies that will help ensure a bright future for the broadcast industry," said NAB President and CEO, Edward O. Fritts. "The evolution of technology is an important part of our DTV strategy."

The DTV Hot Spot will showcase a variety of technologies – including Advanced Common Application Platform (ACAP); Enhanced VSB (E-VSB); Programming Metadata Communication Protocol (PMCP); Software Data Download Service (SDDS);

and Program and System Information Protocol for Terrestrial Broadcast and Cable (PSIP), the ATSC standard recently mandated by the FCC. Companies demonstrating these technologies in the DTV Hot Spot are Harris, Thales, Harmonic, Tri- Vision, ETRI, Zenith/LG, APTS, Aircode and Broadcast Data Corporation.

“The DTV Hot Spot promises to be a real hit with convention attendees,” said ATSC President, Mark Richer. “The future of digital television is here, and there will be demonstrations by companies that are the forerunners in implementing the cutting edge technologies using the standards developed in the ATSC”.

The DTV Hot Spot is located in the Las Vegas Convention Center’s South Hall Upper Lobby and will be open Monday through Wednesday, April 18 – 20, from 9 a.m. to 6:30 p.m. and Thursday, April 21 from 9 a.m. to 4:00 p.m. It is the world's largest electronic media show covering the development, delivery and management of professional video and audio content across all mediums. Complete NAB2005 details are available at www.nabshow.com.

Symantec hit by large-scale flaw
Security hole affects nearly every product Symantec sells

From: John E. Dunn, Techworld.com

Symantec (Profile, Products, Articles) has issued patches to fix a "high impact" security hole that affects almost every product it currently sells.

According to security rival ISS, which unearthed the vulnerability, the problem lies with the DEC2EXE module in the Symantec Anti-Virus Library, a part of the virus detection engine that makes it possible to detect malware inside executable files compressed using the freeware UPX (Ultimate Packer for eXecuteables) format.

The vulnerable module fails to properly check within files when looking for viruses, a flaw that could allow an attacker to cause an software "heap overflow" using a specially crafted UPX file. ISS stated that this could, in turn, give an attacker unauthorized access to a network or its client PCs, as well as confidential information.

The company has posted an extensive list of affected products on its website, which includes its most popular programs for PC, Apple Mac, Linux and AS400 platforms, and even antispam software from Brightmail, a company acquired last year. Those versions not affected are mainly older, non-current versions of products or those updated most recently.

In an attempt to calm anxiety that a serious problem could affect almost its whole product line, Symantec emphasized that it had started removing the DEC2EXE module from its software before the issue came to light.

"Prior to ISS contacting Symantec with this vulnerability, Symantec had already removed the DEC2EXE engine from the scan engine upgrades implemented in the majority of Symantec products. Also, Symantec had planned the DEC2EXE engine removal from all affected Symantec product versions during upcoming maintenance updates," it stated on the company Web site.

New/Different Technology

TiVo Opens Doors to Third Party Developers

TiVo has announced the availability of an early access software development kit that will allow third parties to create entertainment and information applications that extend the TiVo service. The move supports TiVo's new service strategy: Tahiti. The kit gives broadcasters and developers a flexible way to deploy media rich broadband applications to TiVo subscribers, helping to create an open platform for those TV viewers, TiVo said.

AMC-12 Ready to Fly - The AMC-12 communications satellite, formerly called Worldsat-2, is set for launch Wednesday from the Baikonur Cosmodrome in Kazakhstan, stated the latest reports. The launch window opens at 9:27 p.m. Eastern. AMC-12 is a high-power C-Band satellite with three regional beams covering North America, South America and Europe/Africa.

XM Delivers Data for Nissan - Nissan North America picked XM Satellite Radio to supply satellite-delivered data and telematics services, such as in-vehicle messaging and XM NavTraffic. The services offer current traffic information to properly equipped Nissan and Infiniti vehicle navigation systems, the companies said.

Microsoft Supports Verizon - Verizon said it will use the Microsoft TV platform for the commercial rollout of its FiOS TV service, planned for later this year. The Microsoft TV platform will support high def TV, digital video recording and on-demand programming offered by Verizon on the FiOS platform, the phone company's developing fiber service.

Information & Education

Fire at The Tower

From: John White, CBRE-Crawford Broadcasting

Portland Oregon area Broadcaster and Communication Engineers have learned just how venerable our facilities can be to vandalism. A recent series of 16 or more communications facilities and tower arson fires shows the need to upgrade protection. Three of the fires resulted in major losses, with estimates ranging from $100,000 to total loss.

The fires were ignited outside the building, near the tower or cable entrance way to the building. The arson resulted in the ignition of the protective jacket of coaxial and wave guide cables. The fire works its way up the cables the full height of the tower, dropping flaming globs of material as it goes. The cables and entrance way also providing a path to the interior of the building.

Smaller, flexible cables usually carry a CL2, CL2P or similar rating. CL2 rated cables may combust in the presence of flame but do not support combustion on their own. Some larger, semi-rigid, cables are available in fire retardant rated jacketed cables for indoor installations. Andrew CATVX, CATVR and CATVP Blue and Gray cables are examples. These products have UV stabilizers for "outdoor storage".

Outdoor weatherproof and durable semi-rigid cables use a standard black, typically polyethylene, jacketing. The polyethylene jacketing material is used because of its excellent weather-resistance and suitability for use in extreme climates. The trade off is that polyethylene is flammable and the vertical flame spread rate of the jackets is very high.

After the rash of arson fires some form of improved fire protection at our facilities is clearly necessary. At a minimum, the challenge is to stop the propagation of fire up the vertical run of the tower and into the building via the entrance way. Any solutions which can limit damage or delay the spread of the fire are beneficial. Removing a portion of the cable jacket does not provide a total solution when an accelerant is thrown against the entrance way since the flame can still enter the building. The jacket is also required to prevent galvanic corrosion and contact rectification problems.

Fire stop materials have been available for some time for wall penetrations of plastic pipe and electrical cables. These materials are typically intumescent, and when exposed to flame, char and expand to seal and choke off combustion. So far as I know fire stop materials have not been tested with semi-rigid cable or non-penetrating fire stop situations.

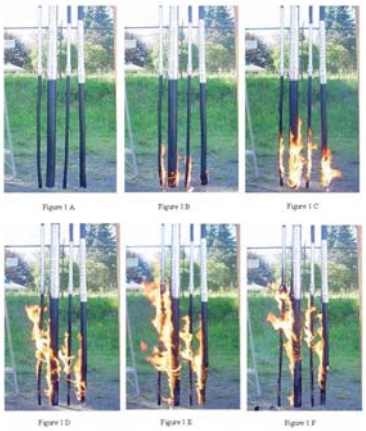
In the presence of heat, the polyethylene jacket begins to liquefy and once in a liquid state the material combusts easily. The copper shield of semi-rigid cable provides a heat conduction path which efficiently liquefies adjacent unburned jacket material, a challenging fire stop situation requiring some form of suitability testing. The results of the testing I did are shown in the pictures, Figure 1A through J.

For this suitability test I chose to simulate cables hung in an orderly manner on a tower cable ladder. The cables I tested included one each 3-1/8 air line, one each 1-5/8 semi rigid-foam, and two 7/8 semi-rigid foam cables. The smaller cables were grouped around and between the larger cables.

At the beginning of the test all cables were ignited at the bottom and photographs taken periodically through out the test. As the test progressed it was seen that flame would easily propagate between adjacent cables. Its clear fire in a group of cables is much more energetic that a single cable. A random close spaced bundle would be much worse. I also observed a large puddle of burning material collect on the ground below the test. I visualized the results as that flaming material fell on a building roof.

In all tests the fire was extinguished at the fire stops. Pictures of the cable after the fire self extinguished are in figure 2, 3, and 4. These tests were not certified and suitability testing for your application is suggested. The penetration portion of the test is discussed below.

In order to speed up assembling the test, I used locally available materials. The materials used included intumescent tape, rubber high temperature tape, foil fire tape and mastic sealant. The recommended restraining wrap strip for the intumescent tape was not in stock so I had to use an alternate solution. I happened to have some wrap lock cable strapping which is no longer used so that became my alternate restraint collar. Manufacture, part numbers and vendor information is shown below.



(More on next page)

Figure 1 G

Figure 1 H

Figure 1 I

Figure 1 J

Figure 2, Burned Cable and Activated Fire Stop

For my test the vertical run fire stop was installed as shown in Figure 1A ALL cables must be fire stopped at the same level, otherwise the fire will follow the unprotected cable then jump back to the protected cables. The fire stop is made up of several components to form a system. See the application drawing below.
Step 1, Intumescent tape.
The intumescent tape is placed at the lowest level, held in place by a restraining collar. The collar holds the material in place when it expands to seal and choke off combustion. Small cables (1-5/8 or less) should have a total of 4.5 inches applied, 6 inches for 3-1/8 cable. I didn't test cables larger than 3-1/8.
Step 2, Under-Wrap Tape.

Directly above the intumescent tape a half lap layer of insulating rubber tape is placed to provide heat protection to the cable. I used 3M Scotch type 77. Extend this wrap to provide at least 24 inches of protection, 36 inches is preferred. Type 77 tape is non-adhesive and requires a binder wrap such as 3M Scotch type 69. See Figure 7 showing the Type 77 ready for the binder wrap.

Return to Index

Figure 3, (left) Burned Cable and Activated Fire Stop

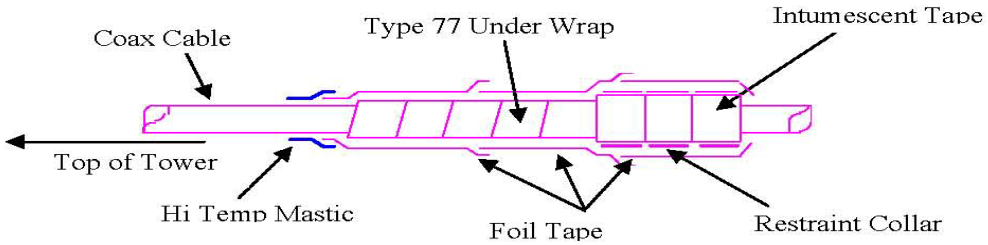
Figure 4, (lower left) Burned Cable and Activated Fire Stop

Figure 5, (upper right) Cable Penetration Flame Side, with extensive damage.

Figure 6, (lower right) Cable Penetration Interior Side, showing no penetration or damage.

Figure 1 J

Step 4, Mastic Seal
As a last step a high temperature mastic is used to seal the top layer of foil tape. In my research on mastic material I found that temperature or flammability specifications are seldom available. I tested using a propane torch, the material may combust under the flame of the torch but should not support combustion on its own. See Figure **11**.



Application Drawing

Under Wrap NOTE. As part of my research I received a sample of a high temperature fiberglass tape. I applied this tape to one cable during the test. The tape is shown in Figure 12.

Material list

3M Scotch is available from several local distributors.
Type 77 fire-retardant tape
Type 69 glass cloth binder tape
CP25WB+ 3M fire barrier caulk

Specified Technologies Inc. (Granger is a local distributor)
SSWRED RED Wrap Strip (Intumescent Tape)
SSC Firestop Collars
WSC-8RED Preformed Restraining Collar
SSWFT Foil tape
SSWRC2 Metal Restraining Collar
SSB Firestop Pillows

ADL Insulflex
PYROTAPE , High Temperature Fiberglass Tape
PYROSIL TAPE High Temperature Insulation Tape

Figure 7, Fire Stop and Under Wrap

Figure 8, Protective Foil Applied

Figure 9, Close up of Burnished Double Layer Protective Foil

Figure 10, Close Up of Protective Foil. Upper Layers Overlap Lower Layers to shed moisture.

Figure 11, Heat Resistant Mastic Overlaps Foil

Figure 12, Alternate Under Wrap

Cable Penetrations:
Vulnerability of cable penetrations are important to check. At my facility I found two wall penetrations that had been weather sealed with canned foam insulation sealant. These foam sealants are combustible and will readily propagate fire into the building.

I used fire stop materials at the cable entrance way. My entrance way fittings allowed filling the 1 inch deep space with a fire chalk material. I used 3M fire barrier CP 25WB+ which is a latex based caulk that cures in place. Figures 5 and 6 show a test of this material. Figure 13 shows a typical caulking application.

If your installation does not allow a caulking solution, an application of intumescent tape and a preformed restraining collar can be used. SSI and other manufacturers have preformed collars with mounting tabs in standard pipe sizes. See Figure 14. Restraining collar strips which can be cut to the required size are also available. Fire stop pillows, small "bean bags" of material, may also be used with larger openings.

Figure 13, Entrance Way Caulking

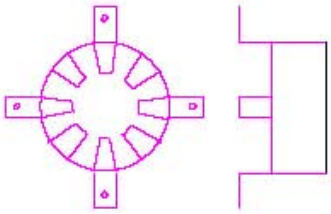


Figure 14, Penetration Collar

Figure 15, Roof Fire Shield

Other vulnerabilities
Fortunately my primary facility building is block / concrete construction with a steel plate at the cable entrance way. The roof and overhang however is wood frame construction which is vulnerable to arson fires at the entrance way. Here I used a metal fire shield to divert flame out and away from the building. Similar solutions should be considered for your facilities.

Other products.
While I was researching available fire stop and control materials I found quite a broad range of products are available. One example is intumescent paint which can protect wood surfaces. These products, such as Flame Seal FX-100 Coating can expand as much as 100 times the coating thickness to protect from fire.

Conclusion
My investigation and tests show that it is possible to fire stop vertical cable runs and that mitigation to control damage is practical on a field retrofit basis. A broad range of inexpensive fire control products are available and ultimately facility protection has huge pay-backs. Fire caulking at cable entrances and fire stopping cables are effective and inexpensive insurance.

Additional product information may be found at these web pages.

ADL Insulflex	http://www.adlinsulflex.com/
Specified Technologies Inc	http://www.stifirestop.com/
Flame Seal Products, Inc	http://www.flameseal.com/index.html
International Fire Resistant Systems, Inc	http://www.firefree.com/

Small Storage Gets Big – Tiny Hard Drives – Sexy Flash 20 cent DVDR = $20 Rolex

From: Tech-Notes Staff

Never put multiple agenda storage people in the same room and ask them who is best!

IDEMA (International Disk Drive Equipment and Materials Association) did it recently to help CE/PC and storage folks understand each other's issues, needs and agendas. The much focused event helped them all get their arms around where things were going for video, audio, photo and darn near every other application.

Guess what?

There's so much data and so much content flying around that people want to grab and store. It's all good!

Organizations and people producing content like they were rabbits. We're giving it to everyone. We're keeping everything. The consensus was HDs in all shapes and sizes will continue to proliferate. The hot segments are the cute new itty-bitty 1-inch drives and flash drives/cards.

Big drives - 5.25, 3.5 and 2.5-inch units -- will pop out in huge volumes as will CD/DVD products. However, profits will be measured in pennies, not dollars.

The Holy Grail for folks isn't enterprise, desktop or notebook storage. Everyone seems to agree the volumes and profits will be in the sexy CE products. Things we can't live without like cam/cell phones; portable, home and auto audio devices; digital cameras/camcorders and products that are still in the labs are increasingly storage intensive.

In every application the device size is shrinking, capacity/performance are increasing, prices are dropping and innovation/implementation demand is growing because people "need" more and more of their content with them…all the time.

30,000 Ft View
Take a look at a few of the applications we readily identify with today and their storage needs now and in the future:

- 2004 2008
- File Size Flash Hard Drive Flash HD
- MP3 Song 1.5MB 5 hrs 1,439 hrs 35 hrs 11,429 hrs
- Photo 1.03MB 139 phtos 38,835 470 154,826
- MPEG-2 Film 2,025MB 0.1 hrs 30 hrs 0.7 hrs 237 hrs
- MPEG-4 Film 260MB 0.8 hrs 231 hrs 5.6 hrs 1,852 hrs

Average Capacity 143MB 40GB 972MB 320GB

The above are the "simple" and rather obvious applications. But they are only the tip of the proverbial iceberg. Professionals, students and just about everyone wants to have his or her content, wants to management him/herself and wants to use and view it on his or her own terms.

Just look at the directory on your notebook. Huge email directory and files. Business documents, data and research. Video and PowerPoint presentations. News and information you know you are going to need. Photos, personal videos, movies, DivX stuff, TV shows you missed. Then there are the CDs/DVDs you have and USB drives in your backpack with really private stuff.

IDC notes that the world's data and content doubles every 12-18 months. That growth is faster than Moore's Law. To process all of that information Intel and AMD are in a battle royal to delivering 64-bit multi-core microprocessors. It's little wonder that storage folks focus on developing bigger and faster capacities.

For storage there are no simple answers. Each side (HD and flash) sees their glass as half full and the other guys as half empty. Each sees the beauty of their solution and the warts of the other.

Flash has volume and mass on their side as well as low power consumption and shock resistance. Hard drives have total capacity; low cost per GB, read/write speeds and unlimited overwrite. Flash's lowest price point will stay lower than hard drives. Hard drive's capacities will always be higher and seem to increase faster than Flash's. Prices in both technologies are decreasing rapidly as we put more and more content on individual devices.

So some applications will simply straddle the fence. One time HDs will win. Other times flash will win. Each will scream they won!!!

Small Spinning Discs

We weren't in the industry when Al Shugart and others unveiled the hard drive (first dubbed RAMAC and later given the hard-driving name Winchester) at IBM in the '50s. Jim Porter, who headed DiskTrends for years and is writing a book on the industry, tells us it had a diameter of 24 inches and stored a whopping 2,000 bits per square inch.

We recall our first 5.25-in HD that stored an amazing 10MB and we wondered how we'd ever fill the noisy thing. We saw our first 3.5-in drive and thought it was just cute as hell. We just saw Hitachi's and Toshiba's new 1-in and .85-in drives with 6 and 8 GB capacities and were blown away.

The areal density has increased 10,000% over the past 20 years and today we have densities that store more than 100 billion bits on a square inch.

Return to Index

Seagate, WD (Western Digital), Samsung, Hitachi and the other spinning platter people see a world of great applications for their products over the next three years (Figure 3). IDC projects healthy volumes for HDs in a wide array of applications including cell/cam/all purpose phones.

What HD people don't like to talk about is drive failures. Yes the MTBF is better than the old metal oxide days and they are steadily improving. Server and desktop drives are very good today but remember companies don't install RAID just because they love to have more platters spinning. For mobile devices (because people are clumsy, careless and "know" our data will be there) the MTBF is cut ½ to 1/3.

MTBF is always a cool number based on a really complicated mathematical formula we could never follow. But the numbers sound good to the consumer. At IDEMA they emphasized the famous "bathtub curve" on failures.

The bottom line is there are two stages to a HD - getting ready to fail and dead!

With more family moments, super music, great ideas and answers to the world problems sitting on these drives it is still hard to get people to back-up and archive their data to (yes here it comes) CD/DVD discs. Only people we know who do it are those who have suffered the heartbreak of data loss!!!

Flashy Flash

Yes the tiny HDs like Verbatim's Store 'n' Go HD are cute with great storage capacities - 4GB and next 6GB, 8GB and who knows. But people are becoming addicted to flash - cards and USB drives.

After all they are more shock-resistant, very heat tolerant, ultra small, aren't affected by external fields and require almost no power. The cards let you feel like a big Las Vegas player. The USB drives are rapidly becoming fashion statements. Manufacturers like Verbatim are shipping units with super read/write speeds that will only get better and complex security protection that will also steadily improve.

Demand growth in the key areas - audio players, cameras and phones - looks very inviting to these chip producers. Flash slots are being designed into car radios and navigation systems. Home entertainment systems and SOHO printers will have them. Then add video storage, games and really personal personal storage and the numbers shoot through the roof.

We've seen post production people in music and movie facilities (yes the DRM people) download their work from one station and throw the 1 and 2GB drives to someone down the way to use. An acquaintance at Adobe says each of his kids have three hanging on their backpacks. One for school work they carry back and forth, one for music/photos and one for stuff he feels it is better he doesn't know about. At the New York Times we met with a reporter who had his as a necklace and we see that increasingly with people in all walks of life/business.

A chicken in every pot, two cars in every garage and 4-5 USB drives for every person…that's what drives the world's economy!

CD, DVD Gotchas
People love bargains.

Our wife loves to tell us how much she saved at Nordy's, Bloomies and Macy's. Ok those may be legitimate.

But a spindle of CDs for $5, or spindle of DVDRs for $15 at Fry's, Best Buy or on-line? We know the BOM (bill of materials), manufacturing costs, shipping expenses and don't forget all of those royalty payments. And that is before anyone makes one cent in profit!

It reminds us of once on Times Square when we bought two "Rolex" watches for $20 each for our brother-in-law who plays a decent game of golf. He's good but no Tiger Woods. We gave them to him and said when he had a really bad shot he could rip off his Rolex in a fit of rage and heave it into the pond. He did it once and his playing partners were aghast.

He knew it was a fake.

But there is a lot of unbranded and tier two/three bargain basement media that isn't worth getting…at any cost. Quality varies all over the map. If it can be written without producing a coaster it often may not be playable in certain DVD players, game consoles or ROM drives. Or, the data can disappear in a few days, weeks or months (usually right after it has been eliminated from the hard drive).

The bargain producers usually "borrow" the media identifier code (the information the burner/player needs to recognize the media and access the contents) and punch out their discs. They pass it along to the people who relabel/sell this stuff.

The folks at CDRLabs.com, CD-Info.com, Anandtech, Tom's, CDFreaks.com and other dedicated sites have long known and tracked these issues for their readers -- http://www.cdfreaks.com/news/11357Javascript:OpenProfile('http://www.cdfreaks.com/profile/16754

It may cost a little more than the $15 spindle but there is high quality, reasonably priced media available. Firms like Verbatim, Mitsubishi Kagaku and a few others regularly deliver media content developers depend on and regular/casual users can count on.

The discs may cost a little more initially but if you spend hours or days/weeks developing superb video content or developing the perfect audio mix why would you "save" on the media that is going to hold this valuable work? What about totally irreplaceable family photos and videos? Your personal records or tax returns? And unless you were an

executive at Enron, Adelphi or MCI email and financial transaction archives would seem to be pretty important!

Our brother-in-law knew the real value of his Rolexes because no one really tried to hide the fact and the prices reflected the quality. For the bargain CD/DVD media buyers we agree with Forrest Gump…"Stupid is as stupid does."

Features, History & Opinions

INDOCTRINATING LAWRENCE WELK TO THE 10 MINUTE TIME SPAN BETWEEN COMMERCIALS

By John Silva, Tech-Notes Contributing Editor

In the early days of television at KTLA, Channel 5, I had the opportunity and pleasure of combining both, the directing of television shows, and serving as Chief Engineer for the station -- all at the same time.

This unusual combination came about because the Vice President and General Manager of the station, **Klaus Landsberg**, had come from an engineering background, but had an enormous flare for television production. He created and directed most of the early TV shows that started as far back as the 1940's.

Over the years, Klaus and I developed a great friendship. This happened as we worked closely together in the experimentation of television programming and engineering in the "early" days. I joined Klaus at KTLA in 1946.

Original KTLA studios on Bronson St. in front of the then Main Gate to Paramount Studios

As Klaus developed each show, he then proceeded to direct it for a year or so until his creative juices directed him to other avenues, such as the search for new and interesting talent.

At that point, Klaus would turn the show over to me to direct. I knew each show fairly well because I was his Technical Director on all of these early productions.

In time, Klaus' search for talent led him to the discovery of none other than Lawrence Welk, himself. Lawrence had been in the music world for some time, but had never been involved with television.

On May 18, 1951, with this discovery, Klaus created and directed what became the "Lawrence Welk Show", which was televised every Friday night at 9:00 P.M. from the Aragon Ballroom on Lick Pier in Santa Monica, California.

In 1952, after about a year of doing the show, Klaus and Lawrence, who were both very definite-minded individuals, began to have both business and creative differences.

Sylva and Landsberg in home-brew-remote truck

This went on for a while. Finally, Klaus said to me, "enough of this -- John, you have just inherited the Lawrence Welk Show -- I'll show him!" --- He probably thought I would mess it up, and serve him right!

At that point, I started directing the production. As a matter of fact, I directed it for three years. During that time it developed into the number one rated TV show in the Los Angeles area.

The "Lawrence Welk Show" was both interesting and exciting to do. There was no rehearsal. It was a procedure of counting musical bars and switching and dissolving between three cameras, to the beat of the music, while referring to a special music cue sheet that Lawrence would provide each week.

The sheet had no music on it, but instead, a sequential listing of the band sections (musical instrument groups), along with the number of musical bars played by each, as each musical arrangement progressed. (i.e., 16 bars of violins, followed by 16 bars of brass section, followed by 8 bars of organ, etc.

It was a matter of getting together with Lawrence before the show to go over this cue sheet and to discuss any production details, such as his dancing with his Champagne Lady, Roberta Lynn, or any other detail he thought needed special treatment. This was all the preparation the show ever got -- no camera or talent rehearsal. But the show went off beautifully, with almost no on-camera errors during the performance.

Champaign Lady, Roberta Lynn

Once the show was over, and the dust had settled, Lawrence, his Champaign Lady, Roberta Lynn, and

left-right: Silva, Spade Cooley *(country & western band leader hosted show of the same name on KTLA)* and a very young Welk.

I would meet in the bar in the Aragon Lounge, occupy a booth, and spend an hour or so rehashing that night's performance. Lawrence always wanted me to tell him what I thought of the show, and I always used to tell him it was terrific -- which it was!

At that point in time in the television world, commercials were always scheduled to run in sequences starting every 15 minutes during a production. Usually two or three commercials were involved in each break. This was standard in the industry.

However, as time went on, the networks began shifting over to commercial breaks starting every 10 minutes. After observing these network programming changes, Klaus thought this was a good idea and decided to try it on Channel 5.

All was well until he decided to inaugurate the new commercial break timing on the Lawrence Welk Show.

Lawrence was very unhappy about the whole thing, to put it mildly. He felt very strongly that his show would suffer greatly if it were broken up every 10 minutes with commercials. He told Klaus that in no way was he about to change his show format to accommodate a 10-minute commercial interval. Klaus, of course, had other ideas and was not about to be distracted.

During the days preceding the next show, both of them argued their own cases, with neither giving in. Lawrence declared he was doing his show around the 15 minute commercial break timing. Klaus declared the 10-minute format was going to be implanted right on schedule, and that meant on the "Lawrence Welk Show".

On Friday, the day of the impending show, I was confronted with both Klaus and Lawrence. First Klaus reminded me that I had to exit the show and return to the studio for commercials exactly on split second timing, regardless of what Lawrence was doing with his production at the time.

When I got to the Aragon Ballroom prior to the show, Lawrence, of course, pulled me aside to warn that his musical production was timed as always before -- exactly for 15-

minute commercial breaks. I told him that I had no choice but to follow Klaus' orders, as I worked for KTLA, and that I hoped he wouldn't take this personally.
He said that he was not going to hold me personally responsible, but that I had better not work against his format timing. We shook hands and went our own ways.

Finally show time came, and it went off like clockwork – in the beginning, that is.

Nine minutes into the show the phone rang, and who's on the other end of the line but Klaus Landsberg, himself.

We've just started a fairly long musical number. I'm busy counting bars to the beat, and switching and dissolving between cameras -- and Klaus is telling me to standby, as we are about to come back for the first commercial break.

As the 10-minute mark came up, and the band was right in the middle of this intricate number, we switched back to the studio. Of course, the band played on.

I cued my stage manager, who was John Polich, that we were in a break, and he in turn, cued the camera crew to "cool it" for the break. In the meantime, Lawrence and the band were playing their hearts out.

As performers always play to the camera with the red tally light on, I directed the cameramen to pan their cameras on anything but the band, like at the ceiling, while we were on the commercial break.

When this happened, I saw a strange look come over Lawrence Welk's face.

Anyway, the number concluded, and at that very instant, the studio switched back from that location to the Aragon Ballroom, having completed the commercial break.

Immediately, as scheduled in his program, Lawrence did his commercial lead-in and "sent it back to the studio" -- right in front of God -- and everyone else watching the show!

Of course, we didn't switch back to the studio. Our cameras were focused on Lawrence and the musicians, who were doing absolutely nothing, except maybe scratching their noses or other parts.

As we had about 3 minutes to look forward of observing absolutely nothing, I decided to pan the cameras on the huge audience that surrounded the bandstand.

When Lawrence saw this, he looked very grim. He knew then that he was positively between a rock and hard place.

After about a minute, which seemed like an hour to me, he directed the band to start the next number, and did his normal verbal lead-in.

From that point on, Lawrence did his best, and I certainly did mine, to continue the show and follow our lead in getting in and out of commercials. Of course, the rest of the show was very rough around the edges.

Anyway, after about an hour of this, the show finally struggled to a conclusion, and Lawrence managed to do his normal ending.

Needless to say, Lawrence, Roberta and I did not have our usual post show meeting that particular night. After the show, and a brief word with the production crew, I got into my car and headed back to the studio in Hollywood. There was no way I was going to post-mortem the show this particular night, and I was positive that Lawrence felt exactly the same way.

As a postscript to this episode, I would like to say that after that night, Lawrence Welk was a good sport about the experience, and became very cooperative in adapting to the 10-minute interval between commercials from that point on.

Lawrence and I never looked backwards after this episode. Each week after the show, which continued to be rated "number one" for some time, Lawrence, Roberta and I continued to meet in the Aragon Ballroom Lounge to have our post-mortem meeting after each show.

He never mentioned the incident of the preceding week, nor did I, which in my mind, proved that Lawrence Welk was not only a good sport, but was even a bigger person that I had ever previously imagined.

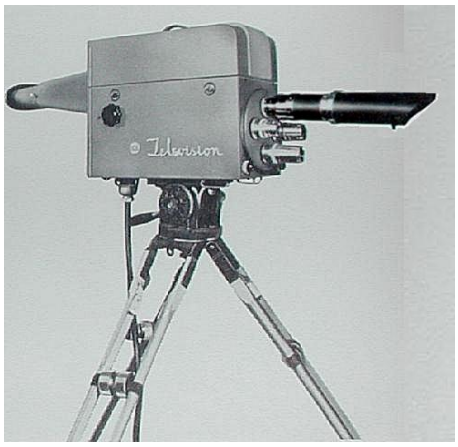
ENGINEERING SETUP FOR THE LAWRENCE WELK SHOW AT THE ARAGON BALLROOM IN THE EARLY 1950'S

For engineers who might be interested in how we did it back in the 1950's, here's a short run-down in the engineering and production setup used on this show, as well as many others during this period.

At this time KTLA had two home-made mobile units equipped to handle the many live shows done each day that were remote telecasts. Today, everything is digital-based. Back then, everything was of analog-design, including cameras, monitors, camera control units, sync generators, video switchers, microwave transmitters, etc.

The mobile units were moderately-sized compared to those used today. We used to call them glorified pie-wagons. At any rate, they accommodated a director, technical director,

an audio mixer, and had observation seating for two or three people, i.e. producer, talent, or guests. These units performed unbelievably well.
For the Welk Show, the cameras were RCA TK-30's having 3 inch image orthicon pickup tubes. At that time we were in the good ole black and white days. The video switcher used was one that I had designed and built myself.



We were about 25 miles from our KTLA Channel 5 studios in Hollywood. The microwave receiving point was at our transmitter site on Mt. Wilson, approximately 50 miles from our Santa Monica location, at a height of 6,000 feet.

So that we would be in sync with the studio for smooth transitions back and forth, we genlocked our camera equipment with KTLA's off-air signals as transmitted from Mt. Wilson.

As a note of interest, back in the late 40's and up to 1950, we built our own microwave transmitter and receiver pair that operated on 2-GHz. The transmitter's RF output stage was a Westinghouse P232 lighthouse tube having a home-made flat metal-loop tank circuit.

When our received signal was not acceptably noise-free I was able many times to save the day by carefully inserting and positioning the sharpened end of a pencil in the loop to provide positive feedback. This many times would double or triple the signal power. Don't laugh! It worked; and we were making history.

Also, during this period our microwave transmitting and receiving antennas were home-made. They consisted of a 7-foot transmitter and 14-foot receiving dish pair each having circularly-arranged and parabolically-shaped arrays made of wooden struts.

In each case, the parabolic reflector surface was accomplished by applying metal wire mesh over the parabolic surfaces of the wooden struts. Each feed was a simple yagi dipole array supported out from the dish to the focal point of the reflector and pointed back along the center axis of the parabolic surface.

However, by the time we started doing the Lawrence Welk Show, we had switched to commercially-built, 2 watt, 2-GHz microwave equipment that had then become available. We also were using commercially-built, all-metal, 4-foot transmitter and 6-foot receiver, parabolic microwave dishes with waveguide antenna feeds.

This commercial microwave equipment really helped to make our lives much simpler.

Early & very early KTLA IDs

(Editor's Note: For more about KTLA and the early days of TV, stay tuned as John has promised more. In the mean time, check out these URL's
http://ktla.trb.com/extras/ktla/virtual/historical.htm
http://ktla.trb.com/extras/ktla/virtual/west.htm
http://ktla.trb.com/extras/ktla/virtual/kandw.htm

Why can't we get the story straight?

From: Craig Birkmaier craig@pcube.com

The FCC never had to tell cable to go digital. The benefits were obvious.

Cable did have several seats at the ACATS table and there were ACATS and ATSC working groups with the specific mission of harmonizing the standards being developed for terrestrial digital broadcast, DBS and digital cable. You might want to consider how 16VSB came about - this modulation standard was developed specifically for cable as a way to develop dual DTTB/Cable receivers. The cable industry said thanks, but no thanks, there are more efficient and cheaper technologies for the protected spectrum of a cable system.

If you really want to understand why cable spent $70 billion for digital upgrades, just look up in the sky.

They were driven by competition. Not from terrestrial broadcasts, but from the death stars above. Then the Internet happened, and cable saw the opportunity to use a common distribution infrastructure to deliver the Triple Play:
1. Traditional multi-channel TV service via the analog tier;
2. New digital TV services - more channels, NVOD and VOD;
3. New digital services including cable modems and VoIP.

More hysterical revisionism.

Let's weave together several recent threads and look at the big picture (not HD).

First and foremost, the underlying motivation has always been about the spectrum. As we have discussed many times, this has manifested itself in many ways over the years. But it would be incorrect to believe that this was all planned in advance.

Opportunism is the driving force behind the digital transition for ALL of the key players, although in many cases - especially for terrestrial broadcasters - this has been manifested in the form of an opportunity to control and delay the transition, rather than building a new business as cable and DBS have done.

Broadcasters have ALWAYS been protective of the incredibly lucrative spectrum franchise they were given, and for good reasons;

Return to Index

1. They are incredibly wasteful with the spectrum resource.

As i have been arguing with Bert for some time now, the NTSC model, with big high powered sticks, leaves vast geographic areas where the spectrum cannot be re-used because of potential interference between markets. This fact is perceived as a huge BENEFIT by broadcasters, as it limits competition (from potential new broadcasters). And it is perceived as a huge negative by greedy politicians and other spectrum users who would like to get their hands on some of this beach front property.

2. The franchise has evolved to afford marketplace advantage to spectrum users based in the concept that it is in the public interest to protect broadcasters from competition. Must carry was bubbling up at the same time as Advanced Television.

In the early '80s several emerging technologies began to bubble up.

1. Perhaps the most important was the ability to distribute TV content via satellite. This enabled cable to offer more programming choice, allowing them to do an end run around the broadcast oligopoly.

2. Enhanced and High Definition television. By the early '80s NHK and Sony were trying to drum up support for what they believed would replace NTSC and PAL, the 1125/60 HDTV system. Others were working on methods to improve NTSC and PAL in a compatible manner. As some members of this list have pointed out (Dale Kelly I think), the original Advanced Television work in the U.S. was focused on compatible enhancements. One of the leading contenders in this area was the enhanced NTSC system developed by Yves Farudja. Farudja understood that NTSC was ALSO inefficient in its use of the 6 MHz channel, and that it is possible to put more information into the spectra of the NTSC signal without interference in existing receivers. His system may well have succeeded, were it not for "spectrum politics."

In this context, broadcasters were beginning to examine ways in which they could enhance the delivered quality of their product; but there was no compelling reason to actually do something, until...

The Land Mobile threat.

In the mid '80s, under pressure from interests who needed spectrum to deliver new (or to expand) wireless telecommunications services, the FCC proposed that broadcasters share the spectrum that they were using inefficiently. The FCC proposed that the taboo channels could be used for telecommunications without interference into the channels actually being used for TV broadcasts. Some two decades later, the FCC is now moving forward with this idea again, issuing a NPRM on broadcast spectrum sharing in 2004.

This was the motivation that broadcasters needed to move forward with advanced television. As Mark Schubin points out, the plan was not to free up spectrum, but rather

to use more of it in a compatible way to enhance the NTSC service - 6 MHz for NTSC and 6 More for the analog HD enhancement signal. When the FCC created the Advisory Committee on Advanced Television Services (ACATS) in 1987, as part of the first R&O on advanced television, they were NOT trying to free up spectrum, they were considering locking it up even tighter. In the end, that is exactly what happened, but a few things changed along the way - a testament to opportunism.

By 1987 interest in HDTV was NOT starting to wane...it was starting to grow. In part because Japan was already doing it with Muse, in part because U.S. broadcasters were using it as their Trojan Horse to protect NTSC, and in part because Japan's competitors in the global CE market were concerned that Japan could establish the next big TV standard.

European interests settled on the embrace and kill strategy. "We'll do our own HDTV system thank you very much." They did, they "proved" that there was no market for it, and they killed HD in Europe for another decade.

Much the same was expected in the U.S.

Broadcasters would tie up the spectrum to offer an HD system that would be compatible with NTSC. Most broadcasters never expected that they would need to do anything other than squat on the beach.

The interest in HD actually began to wane AFTER the decision in the U.S. to go digital. Europe managed to kill the threat and decided to use digital broadcasting to take full advantage of the digital (ITU-R BT.601) upgrades that most European broadcasters invested in between 1987 and 1993. While some do not consider this to be an upgrade to PAL, in reality digital component video delivers most of the benefits of HDTV, especially when the screen size is smaller than 40 inches, which STILL represents about 99% of the consumer TV market in Europe.

It was not the legislature that got on the DTV bandwagon, when they realized that the technology would ultimately allow for the recovery of some spectrum, it was the FCC. After the GI demonstrations the FCC issued another R&O in the advanced television process in 1992, proclaiming that the system would be digital and that broadcasters would get just 6 MHz; after a "transition period in which they would be loaned a second channel, the analog service would be retired and the spectrum re-packed to free some up for the greedy politicians to auction.

At the time there was no Congressional authorization for this proposal. As this was still a development process under ACATS and the ATSC there was no immediate need for such legislation. By 1995 when the ATSC standard had been tested and ACATS recommended it to the FCC, the process moved to Congress. The authorization was bundled in with the re-write of the Communications Act in 1996. The FCC then issued the final R&Os beginning the DTV transition. It took broadcasters only three months to render those orders meaningless, with the 85% rule in the Balanced Budget Ac of 1997.

To date, not a single Hz of broadcast spectrum has been vacated. Congress will "try again" with the Telecommunications Act of 2006.

So yes, it's all about spectrum. Keeping it out of the hands of would be competitors, while broadcasters rely on must carry and re-transmission consent to protect one of the most lucrative franchises ever granted by a government.

Digital Radio

The switch to digital-only radio might happen in a couple of decades. It had BETTER happen in less than 10 years or else it is DEAD!

To a large extent, this will depend on the availability of a simple, relatively inexpensive converter for automotive use. If converters become available at Radio Shack and Wal-mart, the process will go much more quickly.

The average life of cars in the US is around 10-12 years before they are scrapped. Since drive time is the major radio audience, the availability of a converter is almost essential for a transition period less than 7 or 8 years.

For in-home sets, there is a real risk that cable systems may be the replacement rather than new HD sets.

There are far too many analog radios out there to obsolete them anytime soon. We'll have to see virtually all new radios sold with HD (or whatever digital scheme ultimately wins) for a number of years before it can even be contemplated.

It will HAVE to happen fast, or else it's dead. The MW interference will otherwise just kill the MW band.

The problem here is very much like the Red States/Blue States thing in the election. In the Northeast and West Coast population centers, nighttime interference won't cost stations much revenue. In the middle of the country where the problems are more severe and the population more diffuse, it's possible that problems will be significant.

Consider that IBOC is not going to be static. The big unanswered question at this point is the extent to which the receiver can bealtered via a software download. We need to see the final ruling on 99-325 before we can guess about this.

If IBOC is cast in concrete and no converters emerge, then the future of AM is very bleak indeed, IMHO. OTOH, if the RM results in flexibility that would permit a listener transparent shift to compatible DRM, or some modified version of IBOC that does not rely on DSB filling both first adjacents, then there may be enough breathing room to

survive a longer transition. Or, if converters emerge, then a fast transition to full digital in a short time becomes possible.

However, this is an evolving digital medium where 2 to 3 years is ancient history. The key will be flexibility. IWO, smart adaptable receivers capable of "on-line" decoding instruction set upgrades, and transparent switching between modes.

Consider that if we had today's DSP power and a similar degree of flexibility, we would not have had the "debacle" that AM stereo became. Stations could have chosen their preferred modulation scheme from the list and receivers could have automatically selected the correct one for each channel. Then, the market truly could have decided the outcome.

That is now technically possible for medium wave broadcasting, but the question of flexibility vs. Ibiquity is for the Commission to decide. Based on their past record I'm not optimistic.

The switch from NTSC TV to HDTV is a different story, because it will free up RF spectrum, which the FCC will then auction to the highest bidder. There's no incentive or political gain for the FCC to make a deadline for radio, as they have done for TV. In fact, can you imagine the backlash they are going to have when analog TV sunsets?

There will have to be a deadline. And in MOST cases HDTV does not interfere with analog. The other way around cannot be said. AND well, what's going to happen to those VHF HDTV allocations that originally were NEVER going to be allowed, especially the low VHF ones?

It becomes a question of counting the cable head ends and the sets they serve within the 85% mandated by Congress. If the FCC is allowed to count them, then the present rush toward disaster will continue. OTHO, if the original intent of Congress is reinforced, the FCC will be forced to wait until the OTA tech becomes affordable to the average consumer. What's at stake here is HUGE for the cable companies and the money will flow like water to try to keep thepresent schedule. Think about their costs if they are forced by the market to keep up with OTA digital quality on a large scale. Later conversion would have that effect. The customer complaints about poor cable quality once they saw an OTA comparison would be rampant. The cable outfits need to keep their systems as they are to keep profits up, and they can't afford mass defections to OTA either. Look at the TV transition from a business viewpoint. That's what it's about IMHO.

From the Pen of Mendrala

By: Jim Mendrala

Cameras, as you all know, are going totally digital. Now I no you have heard this before but seriously if things continue as they are going video tape will be a thing of the past.

On St. Patty's day, Phil Livingston, of Panasonic, gave the STE a sneak preview and some insights as to where Panasonic plans on going with the new concept. He told the Society that television will take on the model of the digital still camera. As we all are familiar with the idea of using the media card, no matter what type, has become universally accepted. The media is relatively expensive but it can be used over and over with no degradation. We don't store images for long on the media cards. We transfer the image data to our computers, CDs, DVDs, VHS, Beta, etc.. There is no processing involved just a digital transfer of data.

Well with that idea in mind Panasonic will be showing it's version of that idea. It will have a camera that has a minimum of 4 card slots to accommodate the media. The cards will be the size of the computer ICIA cards but will have 1 and 2 GB of storage with 8GB available by fall of this year. At that time they will have a prototype HDTV camera available for under $10,000 that will be able to shot SDTV, EDTV, HDV and HDTV: all this at the flick of a switch.

The advantage of using data is that it is not format agnostic. You can shoot at variable frame rates, image formats, etc.. This makes it easy to keep track of shots with the use of thumbnail images in the metadata and other pertinent information. This means that as you are shooting you can be via WiFi be downloading information so that when the image data finally arrives it is ready for editing.

The way the media storage cards are constructed is by putting up to four Multi-GB ICs into a ICIA format card. The cards are extremely fast by today's standards. Plans for 16GB, 32GB 64GB and beyond are all in the planning stages.

Parting Shots

By Larry Bloomfield

Keeping Up With the Technology

Once upon a time, back before the FCC did away with the requirement for "licensed" operators to be part of every station's staff, the Chief Engineer held a position of authority and respect. But it wasn't too long ago when I heard one General Manager comment that his engineer was a "necessary evil." But just let the station go off the air and see how that "necessary evil" is canonized as he or she brings the station back on line. They certainly wouldn't call Ghost Busters.

Having been a Chief Engineer at several stations, I have been fortunate enough to work with General Managers whose worst feeling about their engineers were "they spend

money and don't bring any in." Well, I take exception to that. Keeping the station on the air so it can deliver eyes and/or ears to potential advertisers is equally as important as the sales staff and air talent.

The job of today's engineer, however, is much different than those of old. At one time, an engineer usually had only one radio or TV station to worry about (and certainly only one employer), and it usually kept him quite busy. With all the advances in technology, we've just about engineered ourselves out of a job. Today, it is not uncommon for an engineer to be responsible for a number of radio and/or television properties - and many times not all in the same market. Some stations do quite well with contract engineers, when they can get them.

If you are fortunate and have an engineering "staff," it could well be populated with the two kinds of engineers we see in our industry today: the one who's been at the station forever and the one who has been all over the place. Both bring to the table very complementary talents. The old timer knows when and where all the bodies are buried, and perhaps more importantly, where to find replacement parts for that old (transmitter, audio console, etc.) that should have been replaced some time ago. The engineer that has experience at a number of stations brings different and sometimes better ways of doing thing that he or she's picked up along the way.

I believe that the engineer's job is to deliver the very best quality picture and/or sound possible with the equipment he or she's been given to work with. Engineers are often compared with magicians. There have been times when I've seen engineers make a silk purse out of a sow's ear; especially when the budget just isn't there to do much else.

For engineers to stay on top of things, they have to stay abreast of the ever-changing technology. Continuing education is fundamental to the success of both the engineer and the station he or she works for. This ongoing education is the responsibility of both the engineer and the management that employs him or her. If the engineer doesn't put forth the effort, he or she will, one day be looking at the call letters on the side of the building wondering why he or she was replaced with someone who did.

On the other side of the coin, management is shooting themselves in the foot when they don't foster the atmosphere which enables and encourages their engineers to take the time to take advantage of educational opportunities when they do come up. I need not point out the costs involved in sending away your engineers to classes or factory seminars, and that's not always necessary. There are local opportunities that present themselves when traveling technical road shows come to town and during the monthly Society of Broadcast Engineers (SBE - a national organization).

These monthly SBE meetings afford engineers the opportunity to have lunch, exchange ideas and learn the latest technology in a near-classroom environment, along with their contemporaries. I've heard managers say that they don't want their engineers blabbing all their company secrets. My answer to that is; it may come as a big surprise, but we engineers all do the same things, technically, but each of us do it a little differently - the

electrons that we chase around don't know the difference between a wire in one station or another. Most engineers I know are imbued with the spirit of cooperation because they know the "competing" engineer they help today may be the one that's got that extra "left handed frabbit" needed to get your or his station back on the air someday. Some managers see the value in these meetings and go so far as to cover the minimal (SBE) membership costs and expenses involved in attending these meeting.

SBE chapters meet frequently across this great land of ours. To find out if there is one near you and when they meet, visit the national SBE website at: http://www.sbe.org/ and select the heading "Chapter Meeting Information" along the left-hand menu list. Many SBE Chapters have websites and they can be found by selecting the "Chapters on the Web" heading in the same left-hand menu list further down. If there isn't an SBE chapter near you and there is interest, it doesn't take much effort to put one together and then everyone benefits. Contact the SBE national headquarters for more information, contact either John Poray, Executive Director, jporay@sbe.org or Angel Bates, Membership Services Director, abates@sbe.org.

In a nutshell, the Society of Broadcast Engineers has been around for 40 years and performs many valuable functions: Education, Certification, Frequency Coordination, is a key player in most state's EAS programs and has a liaison that works directly with the FCC. For more information about the SBE in general, take a look at their website: http://www.sbe.org/ or visit our local chapter's website at:
http://www.sbe76.org/Applications.htm

Engineers aren't the only ones who are welcomed to attend SBE meetings - they're open to all interested parties. I know we should have a "bring your GM to an SBE meeting" some time and we will do that when we come up with a topic that won't put the GM to sleep.

The bottom line is: if you're not allowing the time and encouraging your engineers to attend SBE meetings, you're only hurting yourself. A critical part of your station's team won't be as well equipped to keep you informed, nor will he or she be as knowledgeable about what's going on in the rapidly changing world of broadcast technology. The whole station will be the loser. On the other hand, the return on this kind of investment is immeasurably positive!

How to subscribe

Tech-Notes are available two ways:

1. *We can send them to you as an attachment to an e-mail in PDF (Portable Document File) format with pictures, drawings etc. These can be rather large files and are not recommended if you have dial-up service or travel.* Click Here *or* technotes-on@tech-notes.tv

or

2. *We can add you to a list that notifies you when the latest Tech-Notes are posted on our website. These are usually small files and sent as a text message.* Click Here *or* technotes_notify-on@tech-notes.tv

To unsubscribe, Please visit our website and follow the directions: Click Here *or* *http://www.tech-notes.tv/Subscription/un-subscription.htm*

Please visit our web page to review our policies and to see any addition information. *http://www.Tech-Notes.tv*

Return to Index

Thanks.