

Philadelphia Section Presents Panel Discussion: "Preparation for and Implementation of DTV"

Philadelphia

September 9, 1997

Early in July, the new Chair, William Smith, Tektronix, met with the officers and managers of the Philadelphia Chapter to plan for the first fall meeting. Borrowing an idea from the Chicago Section, it was decided to invite a blue ribbon panel to discuss Preparation for and Implementation of DTV.

More than 100 members and guests attended this successful exposition, due mainly to the make-up of the panel consisting of: Dr. Michael Isnardi, Sarnoff Laboratories; Charles Jablonski, NBC; Robert Ross, CBS; Thomas Hankenson, ABC; Bill Weber, WHYY-TV; Ron Lask, PPTN; John Bosak, WITF; Bob Good, WGAL-TV; Slim Kolliner, WCAU-TV; Nancy Horton, WPSG; Cliff Benham, QVC; Sai Naimpally, Panasonic (AVC American Laboratories, Inc.); and Bland McCartha, Tektronix. Highlights from the talks of the principal speakers are presented here.

An Overview of DTV

Held at WHYY-TV Studios, the program opened with an overview by Dr. Michael Isnardi, Sarnoff Laboratories, who discussed the present status of standards and broadcast and receiver issues. The U.S. DTV standards were adopted in December 1996; channel assignments were made in April 1997; and DTV transmission is scheduled to begin in the top markets by December 1998. Approximately 40 stations are due on the air by May 1999, fol-

lowed by 120 stations in the top 30 markets by 2001. All commercial stations are due on-air by 2003 to 2004.

A consumer survey indicates that only 8% of the buying public has shown an interest in digital TV to the point where they would purchase a receiver. Station upgrade costs for tower and transmitter equipment will run between \$2 and \$4 million. Right now an ATSC encoder is selling for \$500,000. Which way will a station chose to go, HDTV or multi-SDTV? When will NTSC television, as we know it, expire—in 2006? The government wants the present channel returned when 85% of the homes are served.

The personal computer industry has always insisted on square pixels and progressive-only fonts. Intel says it will now support interlaced via ATSC standard add-on tuner. Meanwhile, the FCC has approved everything but video.

ATSC Formats

There are presently 18 ATSC formats: HDTV, 1920 x 1080 lines with a 16:9 aspect ratio and frame rates of P24, P30, and I30; 1280 x 720 lines with a 16:9 aspect ratio and frame rates of P24, P30, and P60. For SDTV, 704 x 480 lines with a 16:9 aspect ratio and frame rates of P24, P30, I30, and P60; 704x 480 lines with a 4:3 aspect ratio and frame rates of P24, P30, I30, and P60; 640 x 480 lines with a 4:3 aspect ratio and frame rates of P24, P30, I30, and P60. In addition, frame rates of 23.976, 29.97, and 59.94 are allowed, so in effect, there are 36 ATSC formats. You can see the complexity for building and designing a single ATSC program encoder.

Dr. Isnardi offered several solutions toward the design of a multistandard program stream encoder. He covered the key issues of navigating, numbering and naming, rating systems, content advisory, advanced closed captioning, and conditional access. He stated that there is a program system information protocol that is required; also, a full feature program guide with ratings of programs (similar to the current motion picture ratings), systems information, and again, advanced closed captioning. At least one of the channels offered must be free.

He then moved on to compressed bit stream and seamless bit stream splicing, and the test and measurement instruments needed. His final admonition: Stay abreast of ATSC T3 developments.

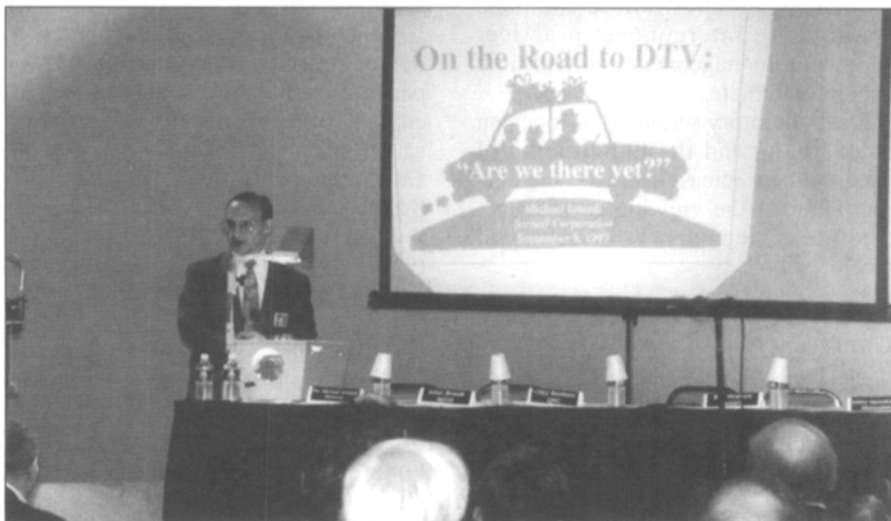
NBC Plans On Target

Charles Jablonski of NBC spoke about that network's commitment to DTV in 1998 at three stations, Philadelphia, Los Angeles, and Washington, and said that the plans were presently on target. He reiterated that all successful TV is local; touched on the creation of the Grand Alliance and recording equipment; and said, "NBC never met a tape format it hasn't liked." Since they [NBC] continuously update their studio equipment, the only investment in DTV is in the transmitter, antenna, and tower end. He commented that people who say there is no business in ATSC television need only to compare it with cellular telephones a short while ago. Jablonski ended by stating "Programming is what matters; all else is housekeeping."

Transition Plans at CBS

Bob Ross of CBS explained CBS's transition plans. WCBS-HD has been on-air since April 1997, and has built a mobile unit to test the signal in Manhattan and surrounding areas. CBS plans to have stations on the air in Philadelphia, San Francisco, and Detroit, in addition to NYC, within the next eight months; Los Angeles and Boston within 18 to 24 months; and Chicago, Miami, Minnesota, Baltimore, and Denver within 24 to 30 months.

They will start phase one as NTSC color started, with local pass-thru, perhaps local cameras, and local playback. Concerning satellite distribution, they will compress ten existing NTSC channels into five digital transponders, and will begin satellite testing by the third or fourth quarter of 1997. They presently own two Mitsubishi encoders and each station will need one eventually.



Michael Isnardi narrating "On the Road to DTV: Are we there yet?" at the Philadelphia Section meeting in September.

Next on the program was Tom Hankenson of ABC explaining that a new tower will be necessary in Philadelphia with the attendant FAA and local zoning approvals. They will share a tower with the local CBS station. Three stations scheduled for the next 18 months include New York, Philadelphia, and Los Angeles, followed by San Francisco in 24 to 36 months.

WHYY's Broadcast Plans

Bill Weber of WHYY, the Philadelphia educational channel, spoke next. He said the Public Broadcasting System had been preparing for digital video for a long time, with planned satellite delivery using MPEG-2 with G.I. techniques. One of the questions he posed was how will satellite space be used and allocated. He looks at the new format as tailor-made since it overcomes the tie to one distribution system.

Present plans are to broadcast HDTV in the evening. Tower space will have to be considered since the station now leases space on its tower and an overload would occur. Plans are to pass through the PBS DTV programs with station ID to be done at the transmitter. New studios are being built, so a new technical resource center should be available in 1998.

Weber also brought attention to the ETV Road Show which will start in Washington and wind up at the 1998 NAB show in Las Vegas. A tour of many major cities will follow. The show is presented in two 53-foot trailers and showcases the TV facility of the future, the classroom of the future, and the living room of the future.

Network Concerns and Opportunities

Ron Lask of the Pennsylvania Public Television Network, said his immediate concern was the recording and later play-



The panel appearing before the audience of 100 at the Philadelphia Section meeting. From left to right: John Bosak, Cliff Bernham, Bill Weber, Jukka Hamalainen, Slim Kolliner, Tom Hankenson, Bob Good, Bob Ross, Ron Lask, Charles Jablonski, and Nancy Horton.

back of programs of DTV for PBS. For example, he plays back "Sesame Street" at ten different times a day currently, and since the smaller markets will be the last to convert, he is looking toward running at least two different standards for several years. His present network distribution system is 27 years old, and within the next 4 years he hopes to update it, dependent, of course, on the legislature of the state of Pennsylvania and the taxpayers. At present, he has over 3,000 programs in his library and knows that video servers will be required.

John Bosak of WITF, the educational station in Harrisburg, presented a proposed 6-step plan to implement DTV that had been suggested by the Public Broadcast Service to the station's Board of Directors. These steps are as follows: planning, which includes feasibility, funding, and application; building, installation, and training; on-air with network

feeds; local recorded DTV material; basic local TV production; and advanced HDTV production and full-power DTV. Bosak plans to start small with a 3-kW transmitter and a 10-gain antenna. He hopes to get good cable system cooperation in his area.

Bob Good of WGAL-TV, Lancaster, Pa., claims to have the number one station in the 45th market on Channel 8 and is concerned that the allocation of HD Channel 58 will affect the ratings of his station. He says that ATSC or DTV is not going to be like the advent of color, although many people think so. He's considering basic station equipment and claims that the total cost to convert to DTV will be well over 10 million dollars.

Next, Slim Kolliner of WCAU-TV, Philadelphia, suggested sending people to model station WHDV in Washington, D.C., as a learning experience. His concerns are 45 Mbits on STL, the amount of power needed for UHF-HD, and the tower site where WCAU will have to remove three sections to accommodate the DTV antenna. He's also concerned about the conversion of programming, what happens to digital RF at transmission frequencies, and circularized polarization of antennas. He sees opportunities galore with new equipment and new technology returning the spotlight to engineering managers.

The next speaker was Nancy Horton, WPSG, Philadelphia, the flagship station for United-Paramount. There are 16 stations in this group and it is still growing. She sees a 4 to 5-year time frame and will be the first in her group to go DTV. A new tower will be required and she is working with WYBE, an educational Channel 35 in Philadelphia on this. There is also a translator in Allentown, Pa., to be concerned about.

Cliff Benham of QVC, a television shop-



Charles Jablonski (c) responds to a question from the audience. Seated left and right are Ron Lask and Nancy Horton.



A member of the audience participating in the final session of the Philadelphia Section meeting.

ping service, noted that 94% of QVC viewers are on cable, with 4% receiving QVC via dishes and the remaining 2% on DBS. The network, started in 1986, put a component analog feeder at the uplink in 1990. In 1991 it added a second program channel; in 1992 it added England; and in 1996 added Germany to its coverage. An entirely digital, serial digital component feed will be added in 1997 at its new Studio Park complex. Implementation of DVT will vary since many of the cable companies supplied by QVC are small operators.

Equipment Development

The first equipment manufacturer on the program, Sai Naimpally of Panasonic (AVC American Laboratories, Inc.) was the next speaker. He remarked that there is much work to be done before a new product is launched, and he sees the key components as being the video decoder and modulator, no matter which format is used. The receivers must play flawlessly, but since the standards have not yet been chosen, (out of the 18 formats) how do you design for closed captioning? How do you test it? The product must be viable in the market for years to come, but there is not much time to do product testing.

Other concerns include the program numbering, and the program guide and ratings, and the minimum standards that are needed as soon as possible. He foresees that the cost of receivers will come down dramatically within a few years.

A Towering Problem

The final speaker was Bland McCartha of Tektronix. He presented the problem for Chicago, where all the stations transmit from either the Hancock building or the Sears Tower. Where do they go? How

or where can you build a 2,000-foot tower within three miles of downtown Chicago? Next, he discussed image quality and its sufficiency and the need for a codec for each compressed storage device. To maintain quality by minimizing generation losses, he advised decompression only when absolutely necessary. He suggested designing a system based on MPEG-2, 4:2:2 high-level standard, and providing 1.5 Gbits in local islands. He encouraged attempting to standardize on one format.

Questions and Answers

The following is a summary of the question-and answer-session that concluded the meeting:

Q. Walt Bundy, Villabits: What happens if or when the transmission format changes, i.e. from 720 P to 1080 I either during transmission or if you're recording the program material.

A. Sai Naimpally, Panasonic: MPEG requires a sequence end code as well as a start code to announce the format. It must also flush the video buffer of the previous signal. The switch is usually done at a benign spot, such as a fade to black.

Q. Ron Lask, PPTN: Will the set be able to receive NTSC as well?

A. Sai Naimpally: Different manufacturers will do different things. However, it appears that the early receivers should receive both.

Q. Mark Everett, Videotek: How many viewers are you expecting? The video consumer is quality conscious evidenced by CD and DVD. What about cable versus antenna?

A. Slim Kolliner, WCAU-TV: About six. [Laughter] Me, my G.M., the people down at Circuit City. But, seriously, I hope there are a lot of viewers. The more receivers they sell, the more the prices will come down.

A. Sai Naimpally: Broadcasters will have an opportunity to provide not only better quality but also, much other programming and services. The consumer has the opportunity to receive much better value.

Q. John Neri: How much will advertisers pay for quality audio and video? Could sports be the driving force?

A. Charles Jablonski, NBC: It's the hardest economic model to work. Programs shot on 35mm film, such as "Bay Watch," "Star Trek," etc., look absolutely exceptional in high definition. Sports is much more difficult to do in high definition and more expensive. I would say that news would be next.

A. Bill Weber, WHYY-TV: Public TV would rank higher in public acceptance with music and "Great Performances," etc. There's something I wanted to bring tonight. It's called "Digital Barney," a computer inside a doll that interacts with television. It has a vocabulary of 3,500 words and plays games and uses wireless techniques such as datacasting. It's really something.

Q. Glenn Hayes, NFL Films: Looking at high definition as program producers, which format do we chose? 1980 or 1280? 4:3 or 16:9? Which compression scheme?

A. Bland McCartha, Tektronix: SMPTE is working on an MPEG compression scheme with field-by-field data. It has the same attributes as 4:2:2 I frame and will be able to select. (Bland will get Glenn further information.)

A. Bob Ross, CBS: Thirty-five-mm film is the highest quality presently available.

A. Glenn Hayes: Since 1980 when NFL started we have over 170,000 feet of 16mm film and mag.

A. Charles Jablonski: The more quality recording media you can use today, the more valuable the material will be down the road. Who knows what the display devices will be 15 years from now. What is the final format? It's a difficult choice for program providers. Use the highest quality presently available.

—James E. Landy
(Secretary/Treasurer),
Landy Electronic Reps.