Section Meetings

Chicago

January 14, 1999

The January meeting, held at the Chicago Production Center of WTTW-TV, attracted 50 guests from SMPTE, SBE, and ITVA Chicago chapters. The meeting included viewing a downlinked teleconference transmission of the program titled Brave New World: A High-Def Tutorial, which was produced by the ITVA Foundation, and included presentations by Richard Wiley, FCC, Joel Brinkley, Author, Randall Dark, High Vision, Josh Bernoff, Forrester Research, John Green, Capital Broadcasting, Bob Tur, L.A. News Service, Alice Ikeda, KCTS-TV, Charles Jablonski, NBC, and Larry Thorpe, Sony. A variety of aspects for producing and broadcasting programming in the new world of DTV were covered. Fletcher Chicago and WTTW-TV sponsored the downlink. Sony, Faroudja, and Canon provided HDTV equipment demonstrations prior to and after the program.—Steve Robinson, Secretary/Treasurer

Chicago

February 9, 1999

Fifty guests from SMPTE and SBE Chicago chapters attended the meeting which was held at the Chicago Marriott-Downtown. Neil Neubert, Professional Products Co., provided an overview of the sampling structures for the various popular video recording and distribution formats. Distinctions between the nomenclature 4:2:2, 4:1:1, 4:2:0 were discussed in detail along with the underlying reason why they were created. Neubert reviewed the data rates associated with each of these structures. It was clearly illustrated that each sampling structure provides more efficient use of bandwidth and minimal perceived degradation. A distinction was made as to which structures are best for acquisition as opposed to distribution. Neubert extended the discussion to several of the new DTV/HDTV standards. He compared the data rates and discussed the issue of progressive versus interlace scanning.

In conclusion, he pointed out that all different sampling structures are compromised, based on how to better utilize the available bandwidth and technology. Each of the products based on a particular standard is optimized for a particular application. Technology advances will be forthcoming to further improve DTV and HDTV picture quality.—Steve Robinson, Secretary/Treasurer

Detroit

January 12, 1999

The January meeting was hosted by Clover Technologies at their new facility in suburban Wixom, Michigan. Mark Schaffer, NDS, began the presentation with a discussion about ATSC and SMPTE standards associated with the ATSC MPEG Stream. He then described various video-input formats and presented a brief tutorial on video and audio compression.

Schaffer explained the status of DTV and gave a brief update on products shown at the CES, which he attended prior to the Detroit Section meeting. He discussed the future challenges facing DTV broadcasters and opened the meeting to a Q&A session.

The second presenter was Gary Stepanian, Clover Technologies. Stepanian opened with an overview of networked digital video and discussed video-on-demand and ATM versus Ethernet in various applications. He also talked about multicasting and the H.310 standard. After a Q&A session, attendees were given a tour of the Clover Technology facilities.—Helge Blucher, Secretary/Treasurer

Hollywood

January 13, 1999

The topic for the January Section meeting was "Towards a Tapeless Environment-Server Applications for Production." The presentation focused on the near tapeless facility recently installed at Paramount Studios for the production of the daily magazine show, "Entertainment Tonight." Bob Kisor, Paramount Studios, hosted the program and offered an overview of the facility and its construction by Che Systems of Los Angeles. He introduced the guest speakers Geordie Douglas, Tektronix, Jay Coley, Editware, and Alan DeVaney, Crispin Corp.

Douglas began with an overview of the eight Tektronix Profiles installed in the facility and networked together by Fibre Channel. Four of the video servers are dedicated to the four edit bays for preparing program segments. These four bays contain some of the only VTRs in the facility for inputting acquisition material. Two additional servers are located in, and assigned to, the production control room for playback purposes. The last two of the eight Profiles are dedicated to final show recording and play-to-satellite functions. Completed segments are networked directly from the edit bays to one of the control-room playback servers for insertion into the show. The second control-room server is primarily used for playback of graphic elements, opens/closes, looping, logos, etc.

Coley followed with details on Editware's nonlinear software module that controls the Profiles used in the four edit bays. Editware's well-known linear editing system was modified to control Profiles as record devices while controlling VTRs as source devices. Alternately, material can be digitized into the Profile then edited from one channel of the server to another. Either allows for "virtual" (i.e., nondestructive) preread editing on segments.

DeVaney completed the presentation with an explanation of the Crispin automation software than can reside directly on the Profiles NT CPU. This software sequences playout of the final program in several customized configurations depending on the distribution path (domestic or foreign versions). Crispin also provides several utility modules for capture and manipulation of video clips within the Tektronix Profile video servers.

After the presentation, questions regarding the specifics of the system were directed to the panel.—Phil Squyres, Manager

SMPTE SECTION CALENDAR

Rocky Mountain
For further information contact Section Chair Fred Baumgartner, TCI, tel: (303) 486-3946, fax: (303) 486-3891, e-mail: baumgartner.fred@tcinc.com

Dates for future meetings

April 21, 1999: Chapter get-together at NAB

May (TBA): Student program at Auraria (tentative)

June 16: Ceavco Program - Time and Topic to be announced

July 14: Ninth Annual Picnic at Lookout Mountain

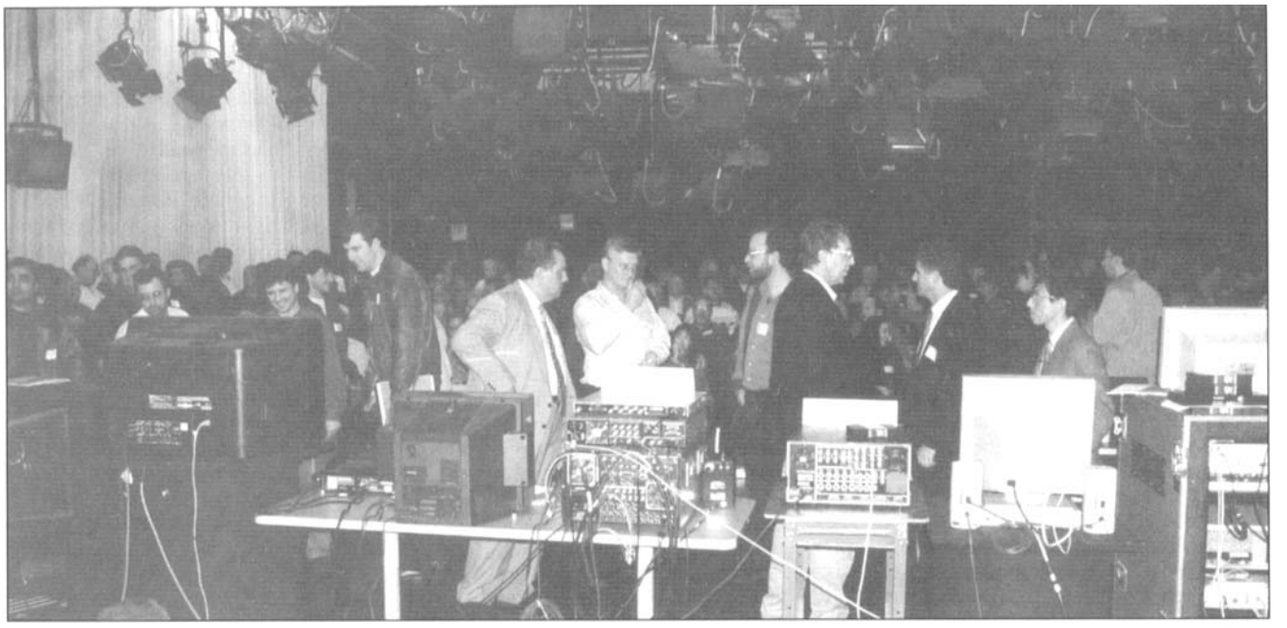
August (TBA): Backup Power - Dennis Roundtree, Plannergy, Inc.

September 15: Lunch at NDTC, 12 noon

October (TBA): Rocky Mountain Film and Video Expo

November (TBA): Ceavco Chapter Elections

December 15: Lunch at NDTC, 12 noon



San Francisco's January meeting had over 250 in attendance. Featured speaker Bill Zou stands in the foreground on the right. Other speakers included Will Washington, Roy Trumbull, Dave Van Hoy, Richard Majesty, and Gary Youngs (sixth from right).

San Francisco Section Report
January 28, 1999

Over 250 people jammed into the North Studio of KPIX-TV, San Francisco, to participate in an historic program titled "Bay Area Broadcast DTV and HDTV: Are We There Yet?" Many attendees of this combined SMPTE/AES monthly meeting got their first look at realtime high-definition television (HDTV) broadcasts. Most had only seen closed-circuit or simulated-broadcast HDTV or DTV demos. The event, also attended by SBE members and guests, included tours of the KPIX-HDTV plant, which was conducted by Will Washington, Dave Hancock, and others from the station's engineering department.

Bill Zou, General Instruments, began the presentation by explaining of the heart of the HDTV process-the ATSC-compliant encode/decode systems. He examined the digital video and audio streams as they leave the network or other source, make their way through the local affiliate's plant and transmitter, and get to the home DTV decoder.

For the first time in history, digital audio and video signals reaching consumer DTV sets theoretically suffer no degradation after leaving the originating studio. Zou stated that some of the digital signal-processing silicon in home set-top decoders and DTVs is identical to that used in professional studio gear. He showed different DTV encoding solutions and architectures, and discussed performance and interface challenges.

Roy Trumbull, KRON-TV, entertained the audience with tales of both the dark and light sides of how KRON gets their digital signal into local living rooms. He noted that Bay Area broadcasters currently have about 100 HDTV viewers, most of whom stay in close contact with the stations and provide reception reports. Trumbull added, "Isn't it nice to know your audience—by name?" He also described the many challenges of engineers to equip the giant Mt. Sutro antenna site in San Francisco with new DTV elements and transmitters. These problems have limited DTV broadcasting in the Bay Area to a few stations that are on the air only a few hours a day. According to Trumbull, broad implementation of HDTV may be as much as two years behind schedule in this and other markets around the country.

Will Washington, KPIX, shared some of KPIX's experiences in implementing HDTV in their plant and at the transmitter site. No two "call-letter" stations in the Bay Area are approaching DTV engineering exactly the same way. For example, KRON uses the General Instrument encoder system; KPIX uses Mitsubishi gear; other stations use different vendors. The goal of some DTV encoder makers is to provide a multistage, flexible approach to migrate from NTSC to standard-definition digital to high-definition.

Audio DTV expert Dave Van Hoy, Advanced Systems Group, offered advice on monitoring the AC-3 digital audio path, as well as coping with the problem of audio-video synchronization. Many of the realtime HD broadcasts shown that night suffered from severe A/V sync problems, something that currently plagues many DTV efforts around the country. The problem lies with encoding and transmission on the station end, as well as design problems in the various receivers currently available.

Richard Majestic, Sony Electronics, and Gary Youngs, Panasonic Broadcast, provided insights into the way Sony's HD equipment performs, and how the gear fits into studio signal recording, processing, and encoding operations. General Instrument, Panasonic, Sony, and KPIX provided professional and consumer HDTV demo gear. Gordon Schaeffer, Projection Presentation Technology, made the formal presentations possible with an SDTV DLP video projector and screen. Audience members expressed pleasure at the quality of the high-definition images that were displayed throughout the evening, including a digital tape Sony had re-recorded several times, each generation with a satellite hop in between. Speakers and audience

members made some critical points regarding HDTV.

There is no business or financial model for HDTV terrestrial broadcasting. The technology is exciting and gradually working better and better, but the expensive program-delivery process may turn out to be a "no-revenue-returning tax" for many American broadcasters. Although they have to pay for the huge equipment investment required, stations cannot charge significantly more for HDTV ads than for standard-definition spots. With full HDTV implementation, only stations in the top-20 U.S. TV markets may be able to remain profitable. Many stations in the bottom-tier markets could go dark as a result of being forced to comply with this "top-down" mandated technology, and spend millions on equipment they cannot afford. Reference was made to the story of "the emperor with no clothes" and his subjects' refusal to admit the obvious.

HDTV seems to generate more emotion than any other technical subject in recent memory. Some in the audience commented that, "The picture is gorgeous, but is it worth the billions that HDTV will cost the nation?" Another added, "It's only television!" The meeting centered on HDTV in the entertainment field; no one discussed HDTV's potential in specialized, industrial, medical, and enterprise applications. Some compared HDTV today to color TV in the mid-1950s. Reference was made to a report that color-TV penetration in American homes didn't hit 50% until 1981, over 35 years after the introduction of color. Many believe the FCC's mandate to end all NTSC broadcasts by 2006 is unrealistic. "Add 20 to 30 years to that date," some said. "Nothing's really changed since color."

HDTV "channel-surfing"—quickly switching from channel to channel to see what's on, for some an American institution—cannot be done with the current generation of receivers, and may never be possible. DTV sets require several seconds to lock onto a signal and select and enable the proper decoding mode. The DTV set has to cope with 32 possible choices of incoming digital "flavors." Some of the current receivers have serious problems, including the possibility of a receiver totally losing signal lock and never recovering, unless the user literally "reboots" his DTV! Having to reboot a TV several times a day—something relatively routine in the computer world—will "go over like a lead balloon" at home and hurt HDTV sales. Some industry experts consider such DTV snafus as merely "teething problems" for an infant technology. Others see the relative fragility and fussiness of the technology as currently implemented, including the channel-surfing issue, as real impediments to its full acceptance by American TV viewers. These problems, according to one commentator at the meeting, provide more evidence that the FCC's goal of "NTSC off the air by 2006" is patently ridiculous.

Nearly 80% of U.S. households now watch TV on cable. Based on what some have seen so far, signal quality does not seem to be an important criterion for some cable operators that offer highly compressed "digital cable." Yet, the success of terrestrial HDTV broadcasting may depend largely on the ability of cable to pass a signal comparable in quality to the excellent 8-VSB mode of over-the-air digital broadcasting. Will terrestrial DTV in America succeed only with a re-sprouting"of rooftop UHF antennas across the country? DTV may force terrestrial broadcasters to do what they should have done in the 1950s and 1960s: install many more repeaters and translators than they have until now, to cover hard-to-reach reception areas. It was poor RF conditions for SDTV 30 years ago that forced viewers to switch to cable television just to get a good picture. Those early cable markets created the basis for the growth of cable as a programming source and not just as a community antenna, competition that threatens the very existence of terrestrial-broadcast television today. HDTV is, in part, intended to provide terrestrial broadcasters with a way to compete with cable. Ironically, recent reports quote NBC chief Bob Wright suggesting the possibility of turning his network into a cable channel, completely abandoning over-the-air broadcasting.

Representatives from San Francisco-based Dolby Laboratories, the inventor of the AC-3 audio system used in HDTV terrestrial and satellite broadcasting here and abroad, were present to answer questions after the meeting. The company's founder, Ray Dolby, also attended the event.

Many meeting attendees said they ended the evening with more questions about digital television than they had when they arrived. And this is just the beginning. As KPIX and other Bay Area broadcasters celebrate their 50th anniversaries in television, we are reminded how significant "right now" is for the next half century. With the FCC's DTV implementation timetable bearing down on us, we are all eyewitnesses to television history in the making.—Peter Hammar, Secretary/Treasurer

Hong Kong
November 6, 1998

The fourth anniversary dinner party took place at the New World Renaissance Hotel with 95 members and guests in attendance. K. L. Lam, chairman of the Hong Kong Section, took the opportunity to brief members on the activities organized by the Section in the past year. He reported that a local association registration for the Section was completed, and a bank account had been set up to facilitate the transfer of funds from Headquarters. The Section has also set up a home page on the Internet to provide members with a channel to communicate and make contact with professionals around the world. Lam announced that they were in the process of organizing a seminar on Digital Terrestrial Television Broadcasting, which would be the major event for the first quarter of 1999.

He also noted that the Hong Kong Section which now has approximately 160 members continues to grow because of the recruitment of new members, through promotion campaigns in post-secondary institutions, to attract more student members.

Representatives of Philips Digital Video Systems, the sponsor of the event, also briefed members and guests on the latest developments in digital broadcasting in Europe, with the demonstration of the LDK series of digital cameras, and Integrated Receiver Decoder for in-home reception of satellite and free-to-air digital services. —David Leung, Section Manager

Hong Kong

During his business tour to the Far East in November 1998, John Couling, Dolby Laboratories, visited Hong Kong and gave a presentation to members of the local Section. The event, which took place in a studio of Radio Television Hong Kong, was titled "Dolby Digital—a Digital Audio System for Television Transmission." Couling focused on the Dolby digital audio bitstream and its flexibility, features, and built-in compatibility that makes it suitable for the audio system for television transmission, from mono up to 5.1 channels, which has been adopted by DVD and known as Dolby Digital (AC-3). He also covered matters relating to the production and distribution of multichannel audio in the broadcast facility, particularly how to post-produce, distribute, and sequence digital audio programs, which has multichannel soundtracks within the existing stereo production and distribution infrastructure. Couling also gave a demonstration of the approach to multi-channel studio-monitor setup for optimum surround effect.—David Leung, Section Manager

Napa Valley College

February 19, 1999

February marked the tenth anniversary of the Napa Valley College chapter. Theresa Boom, a 1998 graduate now working with National Mobile Television, discussed opportunities in the field of engineering portable television studios in a truck. She also discussed the move toward digital transmission versus analog. A cake cutting ceremony punctuated the event. With well over five hundred graduates, future success of the chapter seems imminent.—Scott Cyphers, Secretary

Nashville

January 21, 1999

An enthusiastic crowd of 27 participated as Bill Weldon, Panasonic, presented DUC-Pro and associated digital video equipment. Weldon discussed progressive scan technology and its possibilities as well as digital TV standards. He also covered compression and its effects on quality. He announced that Panasonic was working with DNA to provide a server for quick access to the news in TV stations. Weldon also demonstrated the D-950 record/player and the DVC-Pro 50 camera.—Phil Arnold, Secretary/Treasurer

New York

February 17, 1999

ABC Television Network hosted the February section meeting on Digital ENG and COFDM. Noel Matthews, NDS, gave an overview of the standards and modulation schemes. He discussed the potential of OFDM and some of its apparent advantages, (i.e., protection against static and dynamic multipath, adjacent channel interference performance). Attendants viewed a tape of a mobile trial at channel 9 Australia, with split screen of FM and OFDM. Dan Shine, MRC, also gave an overview on antennas, and Richard Wolf, Wolf Coach, discussed vehicles and end-to-end evaluation to prove the application of the technology.—Warren Singer, Section Chair

Rochester

February 9, 1999

More than 30 people gathered in the main studio of WHEC-TV/Hubbard Broadcasting for one of the most popular meetings of the season "HDCAM—The Workhorse Format for HDTV." Nick Di Lello, Sony, began his presentation with an overview of the design philosophy and technical attributes of this new 1/2-in. format. HDCAM is rooted in the mechanical platform of Digital Betacam, but the increased bandwidth requirements of a HD signal result in the choice of 140 Mbits/sec as "the right number" for both image quality and routing through existing 270Mbit/sec systems. HDCAM achieves its total bit-rate reduction of 7:1 internally, by using both digital prefiltering to approximately 17:6:6 and proprietary, frame-based 4:1 DCT compression. The luminance signals truncate at 24 MHz. While this is shy of the 30-MHz, 22:11:11 SMPTE 274M specifications, Di Lello explained that disposal of that 6 MHz is imperceptible for optically acquired images and would affect only certain computer-generated content. Input and output signals are said to remain SMPTE 274-M compliant. He then discussed a few of the ramifications of HDCAM in contemporary production environments. The most impressive are simultaneous HD and 525 output—both SDI and analog—that permits the use of existing monitors. Marginally more expensive, HDCAM occupies the same form factor as DigiBeta in both the HDW-500 VTR and HDW-700 camcorder. Recording capacities on metal particle tape range from 40 min with the small shell cassette to 140 min with the large shell. The four channels of audio are 48 kHz, 20 bit only—unfortunately they offer no surround capability at this point.

Di Lello continued by addressing the long-term future of HDCAM in a MultiFormat Video (MFV) environment. Viewing production and transmission as separate processes, he introduced the concept of MFV-M for playback of "legacy" signals up to 90 Mbits/sec and MFV-H for playback of HDCAM and beyond to 300 Mbits/sec. Future format variants will include 24P HD, multiformat MPEG and 60P HD. In all cases, the term "tape recorder" has given way to "data storage."

The presentation ended with a hands-on demonstration of the HDW-500 VTR concurrently playing HDW-700 acquired material on both an aging HDVS unit and a regular 525 monitor. Both displays dazzled the audience.—John P. Weiksnar, Membership Chair

New York Section Meeting in February. From left to right: Warren Singer, Section Chair, Noel Matthews, Richard Wolf, and Dan Shine.

Sacramento

January 27, 1999

The Sacramento section meeting was held at Ensemble Designs in Nevada City. Approximately 21 persons attended. Harry Aine lead a technical discussion on his experience with today's Fibre Channel devices, approaches to shared media file systems for IRIX, NT, and Mac O/S, and the management of Fibre Channel-based storage area networks. Aine, and his associate Tony Harris, also discussed various SAN implementations employed today in post-production environments, and what new enabling technologies are on the horizon.—William Carlquist (Secretary/Treasurer) Tekronix

Washington, D.C.

1998: A Capital Year

The DC Section's membership meetings this past year continued to reflect the diversity of the motion-imaging community found in the nation's capital city.

On January 15th, a snowy evening, the meeting was held at the Library of Congress. David Francis, motion picture, broadcast, and recorded sound division chief, surveyed the Library's ongoing efforts to preserve the nation's motion picture heritage. While many early motion pictures are lost to deterioration and neglect, the Library continues to take painstaking action to preserve what is left. Chief Francis showed clips of restoration projects as well as an NBC telecast, *The Magic Flute*, which aired January 15, 1958, exactly forty years to the date. This was the second in a series of programs on media preservation. In March 1997, the Section gathered at the new media facilities of the National Archives in suburban Maryland. There, archivist Alan Lewis explained ideal storage parameters for film and magnetic media (upright, not on the

edge, optimum temperature and humidity) and the problems of "safety-film" deterioration after two to three decades.

On February 19th, members attended a joint meeting with the Audio Engineering Society at WUSA-TV to examine audio for DTV. Steve Lyman, Dolby Lab, discussed the various audio options available in the advanced television standards. This included the idea of a stereo "mix/effects" channel transmitted with multiple language monaural dialog channels. He also outlined his company's new editable compressed format, "Dolby E."

At the March 19th Section gathering, Marc Pfeiffer, New Bridge Networks, discussed video transmission over IP networks, at the company's Virginia office. His presentation included sending multiple feeds over Ethernet, across a gigabit IP router. Attendants were reminded of the ever expanding horizons of motion-imaging presentations and the reality of "desktop" video.

Following the NAB convention, the Section held its second annual "NAB Mortem," as some called the program-"NAB Show Analysis and DTV Trends." April 16th provided an opportunity to review and assimilate the broadcaster's convention. NAB's science and technology vice-president, Lynn Claudy, and staff guided the perspective. Presenters reported the latest news on videotape format developments, channel "branding" provisions, FCC moves, and metadata (Program and System Information (Protocol) standards.

Cable, was the topic of the May 21st meeting at Jones Cable Plant in Alexandria, VA. Tom Gorman and Tim DeVinney gave a glimpse of their version of cable in the year 2000. High-speed access to the Internet and possible telephone services play as big a role in their thinking as what to do with DTV.

The June 18th meeting, previously reported in the *SMPTE Journal*, was a historic roundtable of television stations in the DC area discussing their entry into the digital era of broadcasting.

The Section participated in its joint annual convention with the WEBE (Washington Executive Broadcast Engineers), on September 25th and 26th, in Ocean City. The subject of continuing migration to DTV was discussed. More than 60 participants learned of plans for consumer DTV receivers, from high-end units to set-top converters. Presenters gave overviews of the history of digital television, development, and prospects for the future, plus the "ins and outs" of compression. Seminars were held, explaining new networking models as TV moves to an increasingly server-based environment. Participants learned that Standard Digital Interface (SDI) had become Standard Digital Transport Interface (SDTI). Sessions discussed nonlinear editing and various hybrid tape/disk approaches to news, program, and spot preparation. MPEG 4:2:2 is an emerging, multi-manufacturer standard, with possible frame-accurate editing, as Sony has proved in its Beta SX format. The best advice: Keep things simple, keep options open, and make changes over time.

The October 13th meeting provided a look at WETA-TV's new facility at Campbell Place in Arlington, VA. Lew Zager, WETA, Jerry Butler, PBS, and Larry Brody, Communication Engineering Inc., shared their challenges and the ground they had broken in designing facilities for DTV.

"What's My Line?" is a question asked since the earliest days of television. On November 19th it had a greater significance as members gathered at the headquarters of the National Cable Television Association to explore "The Missing Line,"the Home Digital Network Interface, the preferred nomenclature for Firewire (IEEE-1394) in consumer digital television equipment. Laurie Schwartz, Cable Lab, explained difficulties faced by the industry: 64 QAM-preferred by the cable industry, versus 8—VSB—the U.S. Terrestrial Transmission Modulation Format, copy protection, encryption, and navigation between set-top boxes and consumer DTV displays. She explained how the choice of 64-QAM pass-through of translated terrestrial DTV signals would eliminate auxiliary services such as program guides and encrypted premium channels. Coexistence of various transmission schemes creates high and unrealistic bandwidth requirements.

The topic of the December 10 gathering was a "big stretch," that is, the difficulty producers and post-houses face in future proofing product for wider aspect-ratio display. Jeff Huey, Dave Markun, and Ken Miller, Henninger Capitol Post-Production House, addressed various solutions, primarily anamorphic television techniques, super 16mm production, and digital sizing manipulation (exploiting traditional standard-definition television plants for the time being). Their conclusion: no strategy is perfect, no size fits all, and exploration for solutions continues.

As the Section looks toward 1999, it promises another interesting year of technology updates and matters of interest to those involved in the motion-imaging craft.—James Suthard, Secretary/Treasurer

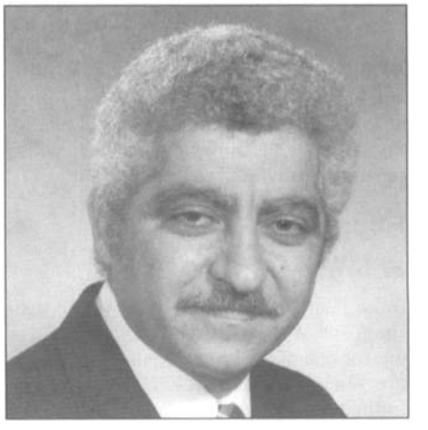
News

Technicolor Focuses on Film Restoration
Technicolor has organized a new company that will specialize in film restoration. The Technicolor Film Restoration Co. will be headquartered in a new facility adjacent to the main Technicolor Film Laboratory in Hollywood, CA.

"We must restore and preserve the past, if we are to have a future for film," said Technicolor President Ron Jarvis. The company's goal is to make high-quality film restoration more affordable and accessible. Separating the restoration function from the mass-production laboratory environment will enable Technicolor to concentrate on the specialized care that film restoration demands.

Rami Mina, a 30 year veteran of the motion picture industry, was appointed to head the subsidiary. He worked for Kodak most of his career, where he headed engineering services for the company's Hollywood region before joining Technicolor in 1996.

Mina, a recognized authority on film restoration technology, said the evolution of HDTV, digital television, and new home video formats are fueling vigorous interest in restoring and preserving old and new classic films. According to Mina, the studios and other content owners anticipate there will be a growing demand to fill the new entertainment pipelines with world-class films. He also anticipates a growing demand for classic films for global distribution, and estimates that at least 11,000 American films could be lost forever if they are not restored and preserved.



Motion picture film is a durable medium, more so than any current form of electronic imaging. If stored properly film will last for hundreds of years, and can be preserved indefinitely if new masters are made as needed.