

# Report on the SMPTE Winter Television Conference

*San Francisco, 28-29 January 1977*

By E. STANLEY BUSBY, Jr.

The 11th Winter Television Conference was a resounding success from every standpoint. There was a record registration of more than 750 paid registrants, with the total going way over 1,000 if you include authors and exhibitor personnel. The equipment exhibit contained 41 booths, with 31 companies participating. Booths were jammed both days of the meeting.

The strong attendance was attributed to the specialized nature of the program. The program dealt with only two subjects, "Beyond ENG" and Digital Video. This Conference proved once again that a meeting dedicated to a subject of especial interest — coupled with a topic-related equipment exhibit in support of the program — is a very successful formula. And it is one that the Society intends to follow in the future.

The Conference was organized by members of the San Francisco Section under the supervision of SMPTE Vice-President for Television Affairs Frank R. Flemming, NBC. The Conference Chairman was Charles E. Anderson, Ampex Corp., who was in overall charge of this Conference. The program was the responsibility of Papers Chairman Joe Roizen, Telegen. Roizen put together the Digital Video Session on Saturday. The Chairman of Friday's Beyond ENG session was Carlos Kennedy, Ampex.

The other committee chairmen who played important roles in the Conference's success were: Sue Blumenberg, Registration and Finance; Kay Kibby, W.A. Palmer Films, Publicity; Don Lincoln, KPIX, Wine and Cheese Party; W. A. Palmer, W.A. Palmer Films, Sound Recording; Joe Semmelmayer, Eastman Kodak, Projection; and Donna Roizen, Conference Photographer.

## "Beyond ENG" Sessions

After a welcoming message delivered by Frank Flemming, Friday morning's session, chaired by Lee Marvin of Television Research International, opened with a forward-looking paper by Joseph A. Flaherty of CBS Television Network. Mr. Flaherty charted an increasing proportion of news and documentary coverage by ENG methods and predicts the generation of

commercials and entertainment programs using ENG cameras and 1-in helical recorders. Results of a side-by-side comparison of 35mm film, studio TV camera and ENG camera were shown. Outdoor and studio scenes (lighting and make-up were for film) were included.

Dr. G. B. Townsend of the Independent Television Authority, Winchester, England, described ENG efforts in Europe, principally the U.K. The performance of small, portable recorders operating on the 625-line standard limits their use to the second generation. Dr. Townsend recommends transferring to the quadruplex format as early as possible in the production process.

Continuing the conference's international flavor, Uno Nilsson of Swedish Broadcasting Corp., Stockholm, reported on ENG work in Sweden. He is not convinced that 16mm film quality has been achieved in PAL countries using ENG equipment (primarily due to chroma noise and delay distortion in portable recorders). He sees a great need for a low-cost, reliable PAL recorder with improved performance.

C. Robert Paulson of AVP Communications, Westborough, Mass., conveyed his concern about the obsolescence of old skills and acquisition of new ones in the face of an increasing rate of technological development. As the product development cycle becomes much shorter than a working lifetime, it becomes essential to provide training if the industry is to offer a stable, productive career to entrants. A training program supported jointly by unions, management, equipment manufacturers and a cognizant overseeing body is needed. Mr. Paulson believes that the SMPTE should be active in this role.

Isaac Hersly of the ABC Television Network illustrated the range of ENG equipment used by ABC with emphasis on those features which facilitate field usage. The need for mobility was well demonstrated by examples of ground-helicopter-base station microwave link coverage of Olympic sporting events. The cost of equipping a news unit was documented.

Albin R. Hillstrom of KOOL, Phoenix, Ariz., supplied a "local" station's experience with ENG equipment. He described the portable and base-station editing equipment he uses and showed examples of news coverage and on-site documentary shoot-

ing. He sees a continuing need for the use of film equipment.

Friday afternoon's session chaired by David Fibush of Ampex opened with two papers read by Rodney Perry of Eastman Kodak Co. The first by W. G. Doody and R. R. Andrews, presented the results of a rapid-access color reversal process designed to reduce processing time to a minimum for certain sporting events. Running at a high temperature, 140° (60°C), it provides a minimum access time of five minutes, dry to dry. Further work is being done to adapt processors for the high temperatures.

The second paper by J. Erwin, G. Klein, G. Isselhard, G. Martin, R. Perry and R. W. Wein detailed a high-speed (Exposure Index 400 Tungsten) color reversal film for news coverage. (Ektachrome Video News Film High Speed 7250). Examples using standard (98°F) processing, and processing "pushed" to exposure indexes of 800, 1600, and 3200 were shown by Ernie Crisp. Despite graininess and other degradations when pushed to 3200, the information available from the film is greater than that perceived by the eye at a low-light-level scene.

Nigel Hamley of Keeline Productions, London, showed a technique in which edge-numbered film is transferred to tape with the edge numbers showing. Editing decisions are made by video playback using a "joy-stick" shuttle control. The original film is edited by reference to edge numbers and reproduced for release. Examples of the results were shown.

Scotts Gibbs of KPIX, San Francisco, recounted the miseries and trauma of an untrained team suddenly thrust into an ENG environment. Lack of training caused many early failures. Poor reliability, dragging cables and lack of lap-dissolve capability at the base-station editing setup are still frustrating.

The Friday afternoon panel on the future of one-inch helical-scan tape included:

Moderator: James Lippke,  
*BM/E Magazine*

Marcel Auclair, Canadian  
Broadcasting Corp.

Blair Benson, Teletronics  
International, Inc.

Ed Dudkowski, Ed Dudkowski  
Associates

Dick Hill, Consolidated Film  
Industries

Carlos Kennedy, Ampex Corp.

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Uno Nilsson, Swedish Broadcasting Corp.

Boris Townsend, Independent Television Authority, U.K.

Kiyoshi Yamakawa, Sony Corp.

Henry Zahn, Robert Bosch, GmbH

After a brief statement by each panelist, which resulted in descriptions of 1-in helical scan products, their uses and performance requirements, the moderator started by ping-ponging his own questions between the manufacturers and users on the panel.

Questions from the floor quickly brought forth the news that ABC and CBS had produced a "white paper" outlining a 1-in format suitable for their needs. It is rumored to be intermediate between that used by the Sony BVH-1000 and the Ampex VPR-1. The manufacturers avoided serious comment since the paper had been in their hands only for a matter of hours. The study of the proposed format will be pursued by a new working group.

For ENG techniques to expand into commercial and entertainment programs, a portable (20-lb) recorder is needed. Nilsson sees the 1-in helical format replacing quadruplex. Townsend is unconvinced that quad will disappear and questions the economics of maintaining two standards. Hill and Benson, both of whom offer services, see the requirements of their customers determining their course.

#### Digital Television Sessions

Saturday morning's session, chaired by William Orr of Orrox Corp., began with a review by Joe Roizen, Telegen, Palo Alto, Calif., of the intrusion of digital techniques into the industry. It was copiously illustrated.

Frank Davidoff of the CBS Television Network, New York, followed with a tutorial paper dealing specifically with the digitization of the video signal. He recommends the use of CCIR picture impairment scale in judging system performance. He feels that as the number of "black boxes" proliferates, the desirability of a standard digital interface increases.

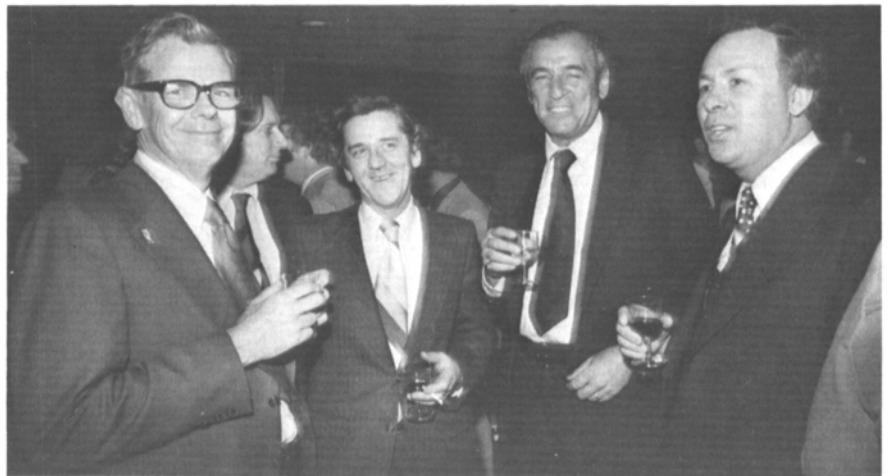
Walter Kester of Computer Labs, Inc., Greensboro, NC, traced the history of analog-to-digital converters, beginning with discrete component "boat anchors" and ending with the latest circuit-board-mounted monolithic packages.

Stephen Beck, a consultant from Berkeley, Calif., showed the results of his work in video pattern and effects generation using a relatively slow microprocessor with limited memory coupled to a bus-oriented video generator. Taped examples were shown.

Eugene Leonard of Systems Re-



Technical sessions had large audiences throughout both days. Easily identifiable at this presentation are Charles Ginsburg of Ampex, Henry Zahn of Bosch/Fernseh, Bert Dann of IVC, Rollie Zavada of Kodak, Bob Vendeland of Dynair and Ralph Baker of the University of Arizona, a very broad cross section of the SMPTE membership. (All photos courtesy of Donna Foster Roizen.)



Charles Anderson, conference chairman, reflects satisfaction with the progress of the Conference as he sips some wine with Marcel Auclair of the CBC, Dick Sirinsky and Jean-Louis Major, both of Ampex.



The 1-in VTR panel wrestled with a real dilemma in current broadcasting techniques — which format upon which to settle. Jim Lippke of BME starts off the panel discussion with a review of the three formats available.



Frank Flemming, NBC.



Dr. Boris Townsend, IBA.



Ernie Crisp, Kodak.



Uno Nilsson, Swedish Broadcasting.



Isaac Hersly, ABC.

sources Corp., Plainview, N.Y., reflected on the impact upon the industry of two developments: the increasing use of the TV receiver for graphic display, brought on by the popularity of inexpensive video games, and the capability of two-way data interchange over cable networks.

It'shak Dinstein of Comsat Laboratories, Clarksburg, Md., showed the result of their work in selecting the optimum trade-off between quantizing noise and slope-overload effects in Differential PCM applied to television pictures. The responses from viewers were logged and analyzed by computer.

Dr. G. B. Townsend of ITA gave a quick report on efforts in Europe toward standardization of digital transmission of TV signals. For video the choices are dictated in part by the bit rate of existing facilities. He anticipates a sampling rate of twice the subcarrier rate for transmission and four times subcarrier rate in the studio. For audio a 120-kilobit/s circuit is anticipated, but the choice of instantaneous or near-instantaneous companding and the companding law remains to be made.

The Saturday afternoon session, chaired by Louis Pourciau, of IVC, began with a paper by Frederick Buhler and Robert Samuelian of Ford Aerospace and Communications Corp., Palo Alto, Calif., detailing their approach to the design of a scanning standards converter. The input composite signal is decoded into luminance and color-difference components. These are digitized and processed along more or less parallel paths to attain line and field rate conversion. After conversion to analog form, they are re-encoded in the new standard.

J. Brian Matley of Micro Consultants Inc., Palo Alto, Calif. recalled the history of frame-store synchronizers and showed examples of numerous applications in which set-up time was sharply reduced. He also explained how a single synchronizer can serve multiple sources by applying it to the output of a simple switcher.

Yves Faroudja of Y. Faroudja, Inc., Los Altos, Calif., read a paper (co-authored by Allan Swain) comparing analog and digital methods of video signal enhancement, especially in terms of cost effectiveness. In systems requiring long delay, digital has the edge. Some functions fell into the digital camp if for other reasons the signal is already digitized, otherwise, analog is more economical.

Charles Rhodes of Tektronix, Inc., Beaverton, Ore., described a new video signal analysis instrument. It employs a newly developed A/D converter which is fast, accurate, and doesn't need the usual sample-and-hold cir-

cuits. Signal digitization and storage is followed by computer analysis and printout of a long list of signal parameters.

Luigi Gallo of Ampex Corp., Redwood City, Calif., supplied more details about the Electronic Still Store with special emphasis on the methods used to achieve the increased packing density necessary to employ an otherwise unmodified digital disc drive.

Charles Ginsburg, also of Ampex, ended the session with a report on the work of his committee dealing with digital video. He outlined the pros and cons of digitizing the composite signal vs digitizing its components separately. An experiment using cascaded analog-digital-analog devices showed adequate quality after seven "trips" through the system, indicating that systems employing numerous analog in/out "black boxes" are reasonable as a near-term stepping stone toward the all-digital studio of the future.

#### Activities of the SMPTE Engineering Committees\*

Taking advantage of the presence of many of their members attending the Winter Television Conference, three SMPTE Engineering Committees held meetings during the conference at the St. Francis Hotel in San Francisco, California.

**The Committee on New Technology** under the chairmanship of Frederick M. Remley, Jr., of the University of Michigan, held a meeting on Thursday, 27 January 1977. Discussions were held on the activities of the five study groups under the committee—

The Study Group on Digital Video under the chairmanship of Charles Ginsburg of Ampex, reached a point in its activities whereby a recommendation was made that a working group be formed to consider standards for digital input and output ports for equipment interface as well as a standard for a digital signal format for System M (NTSC).

A Study Group on Digital Audio is currently being organized.

A Study Group on Time Code for Motion Pictures has been reconstituted under the chairmanship of Bob Leonard of Universal Studios.

The Study Group on Video-Disc Systems is being reorganized and a chairman is being sought.

The Study Group on High-Resolution Television is in its formative stages under the chairmanship of Donald Fink of IEEE.

\**Edit. Note: This section of the Report was prepared by A. E. Alden, Manager, Engineering Services, SMPTE.*

Peter Custer took the opportunity to demonstrate fluorescent sound recording on motion-picture film.

The next meeting of this committee will be held following the NAB Convention in Washington, D.C. on Thursday, 31 March 1977.

**The Committee on Television Video Technology** under the chairmanship of Albert H. Chismark of WTVH-TV was held on Friday, 28 January 1977.

Fred M. Remley, Jr., the Chairman of the New Technology Committee, reported briefly on the activities of his study groups. Discussions included such items as RP27.6, Specifications for Gray Scale Operational Alignment Test Pattern for Studio and Field Television Cameras, activities of the Working Group on Television Color Cameras, and an introduction of a proposal of a modification to the standard color bar generator, as well as potential standards for the ENG area.

The committee members were asked to consider new areas which may require standardization, and submit them for discussion at the next meeting of the committee, which will be held on 30 March 1977 in Washington, D.C., concurrently with the NAB Convention.

**The Committee on Video Recording and Reproduction Technology** under the chairmanship of Norman C. Ritter of the 3M Company, held its meeting on Sunday, 30 January 1977.

Mr. Ritter reported that the SMPTE received a recommendation to develop standards for 1-inch helical recording systems, both segmented and non-segmented. Accepting the recommendation submitted by ABC and CBS through a joint study, Roland J. Zavada, the SMPTE Engineering Vice-President, assigned the activity to the Committee on Video Recording and Reproduction Technology.

Recognizing the urgency indicated in the ABC-CBS proposal, the committee recommended that the subject be handled in working groups which would report directly to the main committee. This would also separate the broadcast and non-broadcast items insofar as the basic parameters are involved.

Consequently, the Chairman, Norman C. Ritter, authorized the formation of two working groups; one, on 1-inch (non-segmented) helical video tape recording systems, under the chairmanship of Fred M. Remley, Jr., of the University of Michigan, the second, on 1-inch (segmented) helical video tape recording systems, under the chairmanship of L. Merle Thomas of the Public Broadcast Service.

The working group on non-segmented systems was scheduled to hold

its first meeting on 23-24 February 1977 in New York City.

Mr. Zavada pointed out that anyone who is substantially concerned with the 1-inch tape systems, and wishes to participate actively in this activity should contact Alex E. Alden at SMPTE Headquarters.

The committee also held discussions on the 1/2- and 3/4-inch video tape formats, on which proposed standards have been completed.

The committee is also diligently working on items dealing with the current quadruplex systems. These items include: practices concerning color leaders; new leaders for use with commercials; updating of current standards; development of nomenclature for video recording; a cueing system for automatic tape device; and a standard for the waveform for the time and control code.

Inasmuch as the committee works closely with international committees in this field, updated reports were presented by Fred M. Remley, Jr., of IEEE/G2.1.5, on signal-to-noise measurements in video recording and the activities of IEC/SC 60B Committee on International Standards for video recording.

Bill Nicholls of CBS reported on the activities of EBU including the numerous topics now being studied by the EBU Working Group.

The next meeting of this committee is scheduled to be held in New York City on Wednesday, 4 May 1977.

### Equipment Exhibit

The equipment exhibit was an unexpectedly large one for this meeting. Up until last year's Television Conference in Detroit, there was never a formal equipment exhibit at a Winter TV Conference. (Last year's exhibit had 23 exhibitors in 24 booths; this year we had 31 exhibitors in 41 booths.)

The exhibit was primarily limited to companies that had equipment of a kind that was being discussed in the technical sessions, i.e., "Beyond ENG" equipment, and digital-video equipment. The response of the attendees to the exhibit was extremely positive as evidenced by the strongly favorable comments of the exhibitors.

The following companies participated in the equipment exhibit:

Ampex Corp.  
Arvin/Echo-Echo Science Corp.  
Robert Bosch—Fernseh Group  
Christie Electric Corp.  
Chyron Telesystems  
Cinema Products Corp.  
Cine 60 Inc.  
Consolidated Video Systems  
Convergence Corp.  
Digital Video Systems  
Eastman Kodak Co.  
Eigen Video

Farinon Electric  
Frezolini Electronics, Inc.  
Hitachi Denshi America, Ltd.  
Ikegami Electronics (USA) Inc.  
International Video Corp.  
Lenco, Inc.—Electronics Div.  
Lowel-Light Mfg. Inc.  
L-W International  
Merlin Engineering Works, Inc.  
Micro Consultants, Inc.  
Microtime, Inc.  
Microwave Associates, Inc.  
Philips Broadcast Equipment Corp.  
RCA Corp.  
Recortec, Inc.  
Sony Corp. of America  
Telescript  
Television Research International, Inc.  
Vital Industries, Inc.

### Get-Together Luncheon

On Friday afternoon, the Society held its Get-Together Luncheon. Conference Chairman Charles Anderson opened the luncheon and was followed by SMPTE President William Hedden who made a few short remarks. The luncheon guest speaker was John M. Taff, Assistant Chief, Policy and Rules, Broadcast Bureau, FCC.

Mr. Taff outlined the methods by which his committee sets up policy and generates rules for the broadcast industry. His main message was that SMPTE members with their special skills and technological background are in a position of vantage to come forward and suggest new policy or comment on rules. He invited the membership to take such initiative upon themselves to the betterment of radio and television in the United States.

The FCC is issuing a questionnaire on the VIA signal with the expectation of eventually ratifying some sort of test signal in the vertical interval, and Mr. Taff solicited SMPTE comments on this important decision. They will also issue a report supporting use of circular polarization for antenna propagation.

As far as international affairs are concerned, Taff said the FCC is developing a position for the ITU world meeting on RF spectrum space and allocations to be held in Geneva in 1979.

### Acknowledgments

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