

# TECHNICAL COMMITTEE REPORTS

## MINUTES OF THE MEETING OF THE DIGITAL AUDIO TECHNICAL COMMITTEE

Date: 1984 October 7

Time: 1935 hours

Place: New York Hilton, New York City

Present: Bart Locanthi (Pioneer North America) Chairman, R. Barth (AEG Telefunken), G. Barton (Consultant), D. Bennett (CBS), D. Brand (Walt Disney Pictures), R. Cabot (Audio Precision), D. Evans (National Bureau of Standards), R. Finger (CBS Technology Center), H. Ford (HF Engineering), N. Gilchrist (BBC Research), T. Griffiths (Decca/Polygram), J. Ive (Sony Broadcast), R. Jaeger (Lexicon), G. Jennings (Lexicon), N. Kikuchi (Matsushita Electric Industrial Company), R. Lagadec (Studer), P. Ladegaard (Bruel & Kjaer), C. Linton (Lexicon), L. Manno (Consultant), R. McDonough (Harris Corporation), E. McLain (Self), G. McNally (BBC Research Department), N. Meacham (SMPTE Rep., Walt Disney Pictures), E. Meyer (Point One Audio), T. Nordahl (Digital Entertainment Corporation), J. Nunn (BBC), D. Queen (Daniel Queen Associates), D. Ranada (Stereo Review), G. Sanders (Consultant, ADDA Corporation), T. Shelton (BBC Designs), K. Tanaka (Mitsubishi Electric), H. Tendeloo (Polygram), E. Torick (CBS Technology Center), T. Yamamoto (Pioneer Electronic Corporation).

The chairman opened the meeting by asking the chairmen of the various working groups to report on their respective activities.

1 Bob Finger reported on the activity of his I/O Interface working group.

The minutes of the Paris meeting were approved without modification.

After the insertion of two words "and capacitor" to section 8.3.1. the "I/O Interface Document For Serial Transmission of Digital Audio Data" was unanimously approved. The chairman then promised to forward the modified document to the chairman of the Digital Audio Technical Committee for their approval and submittal to S4 and to ANSI.

Under new business a question was raised concerning the disposition of the validity bit during and after intermediate signal processing. The consensus was that the validity bit should be held, and later added to the

processed signal and carried forward. Where several channels are mixed down to one, presumably a new validity bit should be appended to the correctly mixed-down signal to begin its new life properly. It was clear that the role of the validity bit will be the subject of future discussion, and may well be relegated to this or another committee.

It was suggested as unfinished business for this committee that the committee consider: a) a multichannel serial data transmission format for both wire and fiber optic transmission, and b) a multichannel parallel data interface.

Mr. Finger promised to discuss these new items with senior statesmen Roger Lagadec and Kunimaro Tanaka and to report back the results to his working group.

The chairman thanked Mr. Finger for his report and for carrying the I/O Interface document to its conclusion. He promised Mr. Finger to move the document quickly through the Digital Audio Technical Committee to S4 and to ANSI.

2 Dr. Lagadec reported on the activities of his working group on Digital Audio Measurement Techniques.

Neil Gilchrist supplied reports on small signal measurements, several by the BBC, one by Ed McLain, and one by Geoffrey Barton. Mr. Gilchrist expects more contributions to be forthcoming from continuing work in Western Europe.

Dr. Lagadec reported in Mr. Schneider's absence on the large signal behavior of A to D and D to A conversion systems. Mr. Schneider has several proposals concerning the measurement of parameters relating to the performance of A to D and D to A conversion systems.

Dr. Lagadec discussed several items resulting from his research on the issue of dispersion. These will be presented in a paper during this convention.

No reports were available from the sub-working group on intermodulation effects. However, a report is expected by the time of the next meeting of this working group.

Dr. Lagadec asked for help in locating a new chairman for the Digital Audio Measurement Techniques working group, who would have the time to be more active than he. Concerning Dr. Lagadec's request for a new working group chairman, the chairman asked for volunteers from the members of the Digital Audio Technical Committee to meet with Dr. Lagadec for a possible replacement.

**3** John Nunn reported on the activities of his working group on labels.

The minutes of the previous meeting were considered and since no points of disagreement came up, the minutes were approved as written.

The question concerning the transparency of equipment to the transmission of channel status user's bits and validity bits was discussed. There was general agreement that channel status information could usefully fall within the scope of the labels working group. If the committee agrees to this, then the name of the working group should probably be changed to "Signal Labeling and Ancillary Data Working Group."

The chairman stressed the need for stronger participation from the video industry in this group. He noted that SMPTE had produced several working papers on the subject of labels concerning video signals.

John Ive from the Sony Broadcast group outlined the present EBU position regarding digital video tape recorders handling ancillary data. He said that it is their intention that channel status user's bits and validity bits should be recorded. He added further that DVTRS will have four audio channels. Mr. Ive also mentioned a problem concerning the DVTR Head Scan Time of 3.33 milliseconds versus the 4-millisecond block repetition rate of digital audio data, and that clearly further work is required to reconcile this difference. Mr. Ive indicated that there is extreme urgency at arriving at a DVTR standard. The present timetable is to see a submission to CCIR in the summer of 1985, and therefore SMPTE/EBU must reach agreement by the spring of 1985.

The chairman had requested at the previous meeting in Paris that additional applications for labels to be added to the existing group be considered. Although only two responses resulted, a clear path was left for future label applications to be added.

The chairman and Roger Lagadec had written to the working group that two undefined areas required attention: CD subcode and editing labels. A subgroup was set up with the objective of preparing a report by the 1985 March meeting. The membership of that group includes Björn Blüthgen of Polygram, M. Nagami of Sony, Guy McNally of BBC Research, Kunimaro Tanaka of Mitsubishi Electric, and Dave Schwartz.

The chairman asked his group to examine the list of labels applications and to report back on the number of bits required and desired repetition rate for each application. The chairman also accepted Mr. Nunn's suggested change in name and scope of his working group from "Labels" to "Signal Labeling and Ancillary Data."

**4** Tim Shelton reported on the activities of his working group on synchronization.

Dr. Lagadec reported that his company had developed a system for the downstream synchronization of equipment to an incoming AES signal. He reported on this technique later at the 76th convention. Dr. Lagadec also reported on his opinion as to the stability (or lack

of jitter) which can be achieved economically in today's source equipment.

A short general discussion took place concerning the selection of master frequencies from which all the pertinent digital audio and video frequencies can be derived. The chairman, Mr. Shelton, agreed to write Jim Gibson of RCA for his comments.

Mr. Shelton agreed to write a general letter to the manufacturers of digital audio equipment to gain information concerning: a) terminals for reception and transmission of reference signals, b) reference signal amplitude range required for synchronization, c) lock-up times, and d) signal jitter.

The working group agreed to the chairman's previous suggestions concerning specific future sub-group activities as listed: a) system standards, b) facilities and general purpose equipment, and c) specification of the reference signal.

It was clear that guidance from equipment manufacturers would be necessary in accomplishing such work.

**5** Dave Ranada reported on the activities of his working group on terminology.

Mr. Ranada submitted a preliminary document containing a list of digital audio terms and definitions compiled by various sources. He made it clear to his working group that his role would be that of a compiler and not that of a creator of terms.

Following a suggestion that a stripped-down version of the list be prepared for consumer use, the committee discussed definitions of several terms on the list. The committee agreed that some terms need definition and more terms should probably be added. (This list is available to anyone by contacting Mr. Ranada.)

**6** Under new business, Mr. Tendeloo mentioned that the minutes of the previous meeting, concerning the development of a clear marking system to indicate the source tape for a Compact Disc, as a digital audio tape or an analog tape, as being a Philips project, were incorrect and the project belonged to Polygram. Mr. Tendeloo reported that Mr. Blüthgen had prepared recommendations for master tape specifications for professional and consumer CD ROMs. This also includes information on how to record subcode information for CD audio and was presented to the Digital Audio Technical Committee for comment.

The chairman brought up a problem that seems to exist in the preparation of master tapes for CD production: the instructions from Polygram and from CBS/Sony seem to be different. This problem, which manifests itself as pauses appearing differently on CDs from those called for by the master tapes, may arise from different interpretations of p and q flags. Mr. Tendeloo responded that CBS/Sony and Polygram had discussed the matter last week in Tokyo and had agreed on a plan to eliminate the problem.

Mr. Nunn commented that two specific issues were raised concerning synchronization and a parallel interface. These matters concern the manufacturers of

small items of digital equipment such as digital reverberation units. Mr. Nunn requested that such companies take an interest in the relevant committees. Mr. Nunn also commented that the EBU had recently set up a working group to look at Digital Audio Recording; till now the AES has left this to manufacturers. Because of this EBU activity, the question was raised as to whether the AES should follow with a similar one. The chairman indicated that pending further information on the EBU activities the committee might consider it.

Dr. Lagadec reported that the first meeting of the new EBU working group will be in Brussels on 1985 October 11 and that the committee could ask the secretariat of the EBU to give the necessary information

afterward. Normally the EBU does not work in consultation with manufacturers but in this case it may. Dr. Lagadec supported Mr. Nunn's view that it is timely that the Digital Audio Technical Committee discuss what a digital recorder should do and then how the recorder should work in terms of recording formats.

The chairman said that he would study the EBU's actions and then make a recommendation at the next meeting, which will be 1985 March 3 or 4 in Hamburg.

The meeting was adjourned at 2030 hours.

BART N. LOCANTHI

*Chairman*

*Digital Audio Technical Committee*