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operations

Audio consoles
Digital audio

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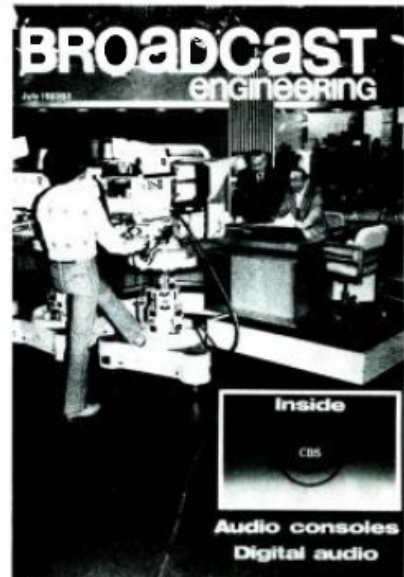
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THE COVER this month shows Studio 46, the WCBS news studio inside the CBS Broadcast Center in New York. Two engineers from CBS Operations are inspecting the studio floor plans. Standing (left) is Jack O'Donnell, director of Technical Services. Sitting (right) is Bob Hammer, vice president of CBS Operations.

Two articles, a view of the remodeling activity at CBS Operations and an interview with Hammer, appear in this issue.

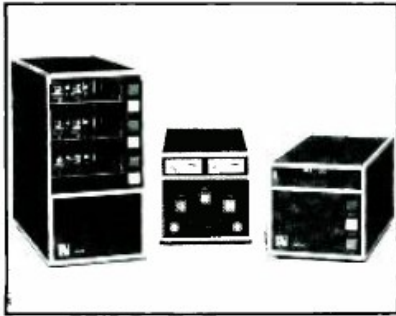
WOSU Broadcast Engineering Conference

- Aug. 16-18, 1983
- WOSU-AM/FM/TV
- Ohio State University
- Columbus, OH

Time is drawing near for the Third Annual WOSU Broadcast Engineering Conference. John Battison, director of engineering, WOSU, has assembled an exciting program of papers, workshops and exhibits for this year's meeting. Details may be found on page 86.

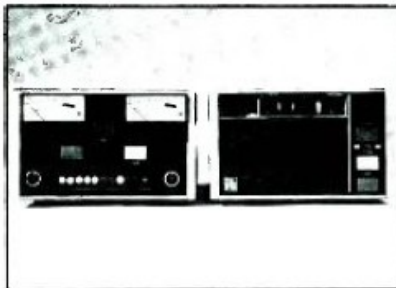
NEXT MONTH:

- Audio processor roundup
- Modulation monitors
- Still-store update
- Montreux-'83 highlights



ITC/3M Delta series

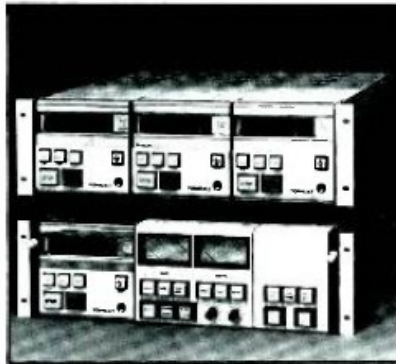
ITC/3M has included a number of changes in the last several years. The brushless dc servo motor may be set to run at 3.75ips, 7.5ips or 15ips with a high speed condition that is 3X the play speed. All three cue tones are detected digitally, according to ITC's Chuck Kelly, sales manager, by the use of microprocessor circuitry. Size has also been reduced in the company's newest system, the Delta series, through the use of a toroidal power transformer. The transformer also reduces radiated magnetic fields and operates cooler. The motor in Delta machines is smaller and runs cooler because of its special dc servo design. Included in the special design is a 2-bearing scheme, even in the 3-deck version, which places the second bearing at the upper end of the capstan. Replacing the previous premium line SP, RP and 3D machines, the Delta series currently uses a ceramic capstan in three versions: an A size; a B and C size; and the 3-deck system.



ITC/3M 99B

The latest ITC/3M systems are closely patterned after the 99B machine, but do not include the special record head phasing system. ELSA, in the 99B, stands for Erase, Locate the Splice and align the record head Azimuth before recording. A microprocessor handles control logic as well as cue tone detection. The ceramic capstan for the 99B is manufactured from materials produced by Coors of Golden, CO. Heads on the machines are of British manufacture and follow a hyperbolic pole-piece design with conical ramps.

The format reduces a response bump at 250Hz that is common on other head types, according to Kelly. Also, output circuitry is referred to as transformerless balanced, but the systems include transformers for use if required.



Pacific Recorders TOMCAT

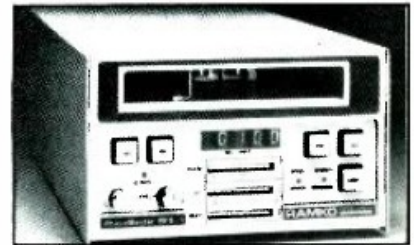
Pacific Recorders and Engineering Corporation introduced the TOMCAT cart machine some time ago in response to user requests for a performance more like reel-to-reel. A dc servo motor with 7.5ips and 15ips speeds drives a ceramic capstan, also from Coors. An 1802 microprocessor handles logic control tasks in the friendly system. TOMCAT introduced some major changes into cartridge systems. The first change to get closer to reel-type performance was the MAXTRAX head format. Jack Williams of Pacific Recorders Engineering Group explained that one of the ways to approach reel-to-reel performance was to use a head that includes two NAB 1/2-track-size tracks with a narrower track for cue and logging functions. The wider track scheme and a wide-face, pole-piece design produce greater frequency response from taped materials.

A second feature of the TOMCAT systems is a dual-format record/reproduce mode. In the *Discrete* condition, left and right channels may be recorded separately on tracks one and two, respectively. Alternatively, in *Matrix* mode, the L+R sum is laid down on track one, while the L-R difference goes on track two. If stereo is desired, the matrix scheme will tend to eliminate phase cancellation effects of residual delay errors caused by warped or skewed tapes, according to Williams.

Although some have argued that the matrixing mode reduces stereo separation, Williams said he thinks that localization effects are the matter being discussed. Far right (or left) sounds may sometimes appear closer to the center. At the same time, some near center sounds may appear farther to the sides. The real purpose,

however, of including the matrix mode was for stations that desired one machine for mono and stereo operation. A special flag signal in the cue track informs the electronics that a mono performance is desired, automatically switching only the sum track to the output terminals of the system.

The TOMCAT includes another unusual feature in that the heads are solidly affixed to the mounting block and are not adjustable. Along with the initial alignment of the heads at the factory, a single major tape guide is used to position the tape properly. Two additional wider guides are used for general "babysitting" during tape-stopped conditions. A self-aligning pinch roller, with roller bearings, completes the tape path determining system.



Ramko RPS-1 PhaseMaster

Ramko Research introduced the PhaseMaster series machines two years ago as an answer to stereo phasing. In the PhaseMaster, an automatic, real time phase shift error correction system samples the upper audio track, encodes the information and places the coded data on the cue track. During playback, the cue-track signature of the upper track is compared with the output from the upper track. Any phasing (or time base) errors create a correction signal for an arrangement of electronically controlled variable delays. The tape track format on the machine is compatible with previously recorded cartridges from other machines. Similarly, tapes recorded on PhaseMaster machines can be used with other reproducers.

PhaseMaster and the new Primus series from Ramko Research use a dc servo motor with a ceramic capstan. The major difference between the two systems is that Primus does not include phasing correction and may not be upgraded to include it, according to David Baldwin, an engineer with Ramko. An advantage with Primus machines allows the parallelism of the pinch roller to be adjusted while the machine is in play, simplifying that adjustment. Although the circuitry between the two series are different, the mechanical design is similar.

Continued on page 84