Auxiliary or Emergency Broadcast Control Room

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For a total cost of $125, one engineer equipped a small storeroom to extract double duty from idle remote equipment as a fixed studio installation.

IN THESE DAYS of intense competition in the radio broadcasting business, not to mention the additional bid for advertisers' dollars now being made by television, it often becomes necessary for radio stations to effect every possible economy in their operations. Yet the engineering department is frequently faced with increased program and recording activities in spite of so-called economic operations, making the technical facilities available entirely inadequate to meet the demands of the program and commercial departments.

There are usually enough studios available, but a serious lack of studio control facilities is generally encountered when numerous auditions, rehearsals, and recordings are scheduled, in addition to the program "on the air." Studio control equipment is costly, so if anything is to be done to improve the situation it must be on the basis of making the apparatus on hand do double duty and of using any spare or obsolete pieces, modifying these units to perform a satisfactory broadcast service. One such situation as outlined above was overcome in the following manner.

Adjacent to one side of the main studio was located a small room, 12 by 7 feet, which was being used for office supplies. Arrangements were made to house these supplies in other parts of the premises and a 48 by 30 inch window was cut through to the main studio and three panes of glass installed to afford sound isolation. This wall, being a studio partition, was already treated for sound isolation. The cost for this work, including painting the window frame was $88.00. Nothing more was spent on this room except for varnish to improve the appearance of the floor.

Several remote amplifiers were in the plant and rarely were they all in the field simultaneously. These field amplifiers are Western Electric 22D models. One of these amplifiers was installed on a small, badly scratched, desk which was given a coat of commercial-looking green paint. Four lengths of flexible, shielded, microphone cable were fed through the wall and terminated in microphone input receptacles mounted in Wiremold boxes. The control room ends were terminated in connectors suitable for the microphone inputs of the 22D amplifier. Two 600-ohm outputs are available on these amplifiers. Flexible cables were connected to these with the other ends terminated in twist-lock connectors. These connectors plug into receptacles mounted in Wiremold boxes and installed on the wall near the desk, from which two shielded pairs are taken to the main jack panel in the master control room. 600-ohm terminating resistors are normally across these pairs at the jack panel end. By means of patch cords, program material fed on either of these circuits can be dispatched to any point, the terminating resistors being automatically removed from the circuit when the patch cord is inserted. *Figure* 1 gives the layout described above and shows the tape recorder setup outlined in the next paragraph.

A portable Magnecord tape recorder, normally used for remote recording work, was placed on a small table near the 22D amplifier. This recorder is equipped with a high-impedance bridging input and a 600-ohm output, both of which appear on screw-type terminal strips. For convenience in removing and replacing this unit, small connectors were installed at the rear of the chassis. The bridging input is connected across output #1 of the 22D amplifier and the 600-ohm output is fed to the 30-ohm microphone input channel #4 through a 600-to-30 ohm, 60-db pad. This provides for recording, through the bridging input, any program material going into the amplifier, and to feed to the amplifier, through #4 mike channel, any tape recording played on the recorder. In this way, three studio microphones and the recorder can be fed simultaneously into the amplifier or, if no recording is played, four studio microphone channels are available. The cable from the input of the recorder is terminated in the same type of connector as the microphone cables and they are, therefore, easily inter-

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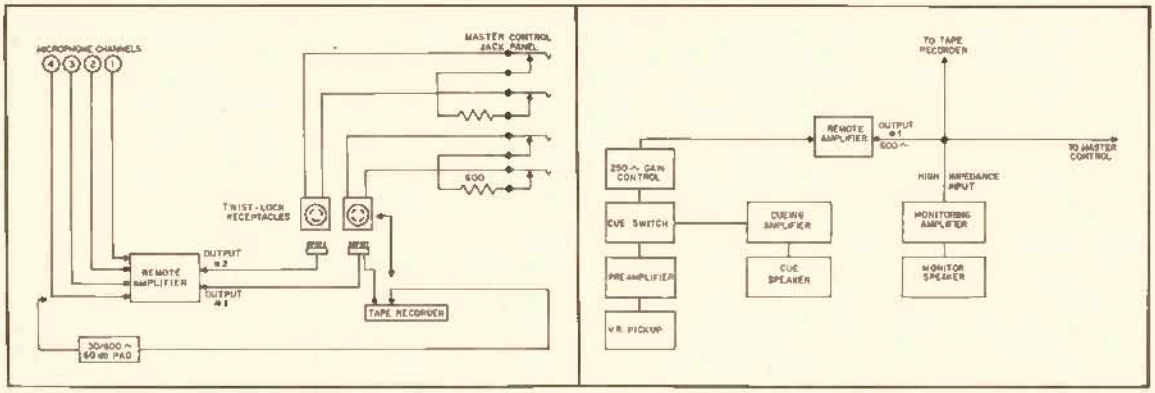

Fig. 1 (left). Diagram showing interconnections between WE 22D Remote Amplifier and a portable tape recorder to provide extra studio control facilities. Fig. 2 (right). Block diagram to show connections for transcription turntable and monitoring amplifier and speaker.

changed. Normally three microphones and the recorder input are kept in position. The 600-ohm output of the recorder can also be fed to either line to the master control jack panel.

For aural monitoring of programs and recordings an audio amplifier and loudspeaker are also bridged across the #1 output of the 22D Amplifier. No details are given here in regard to the monitoring amplifier as many published circuits would be satisfactory. However, one requirement of the amplifier used is that it must include a high-impedance input so that it does not load the 600-ohm output of the 22D amplifier across which it is bridged.

Transcription Facilities

An old transcription turntable which had formerly been used for audition purposes, was salvaged. It was in good condition mechanically, but was equipped with a heavy, obsolete pickup arm and cartridge. A lightweight, inexpensive, Clarkstan (Pacific Transducer) #212 arm was installed and fitted with a G. E. variable reluctance cartridge. The arm includes a quick-change weight adjuster so that standard or long playing microgroove records can be reproduced. The cartridge holder is of the slide-in type and can be changed quickly. Two cartridges are kept available, one with a 3-mil stylus for playing standard records, and the other with a 1-mil stylus for microgroove recordings. A G. E. phono preamplifier, #UPX003, with self-contained power supply was installed in the turntable cabinet to provide the voltage gain and equalization to operate the cartridge into the 22D amplifier. This preamplifier should be mounted on sponge rubber and kept as far as possible from the a.c. field of the turntable motor. In order not to use up another

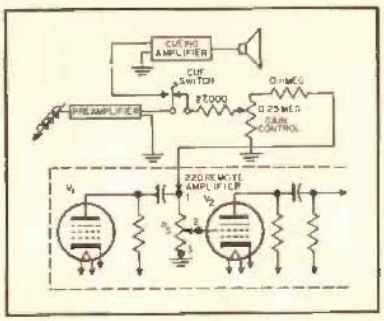

Fig. 3. Details of connections between transcription equipment and 22D remote amplifier.

microphone input channel on the amplifier and because these inputs are of a low impedance value, and as the additional gain of the first stage of the amplifier is not required, the high impedance output of the phono preamplifier was coupled into the second stage of the 22D through a standard phono plug and jack. A gain control was mounted on the turntable cabinet to control the preamplifier output.

So that the operator may cue up a record before feeding it into the control amplifier, a cue switch, amplifier and speaker are provided. The cue

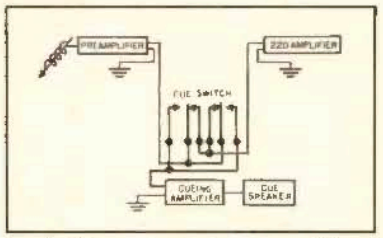

Fig. 4. Wiring of record cueing switch and amplifier.

switch, a push to listen, self-releasing type is conveniently located on the turntable top, the amplifier inside the cabinet, and the speaker on the wall near the operating position. Suitable circuits for the cueing amplifier can be adapted from published circuits.

A block diagram showing turntable and cueing arrangement and monitoring system is given in *Fig.* 2. Connection between the preamplifier and the 22D amplifier is shown in *Fig.* 3, and details of the record cueing switch wiring is presented in *Fig.* 4. It will be noted that dual contacts are incorporated in this switch to avoid continuity failure. The Western Electric type 92A switch is excellent for this purpose. A talkback system is contemplated so that the control operator or producer may talk to participants in auditions and rehearsals via of a small loudspeaker in the studio.

It is to be observed that special care was taken to have the principal pieces of equipment installed in such a way that they would be easily removed for other uses for which they were intended, although the apparatus is normally set-up as described. Inter-connecting cables are terminated in different type connectors making it unnecessary to label any of them to prevent the possibility of incorrect connections between units. It has been found that about 90 per cent of the time the equipment is available when required in this auxiliary control room.

The total cost, by utilizing component parts on hand, amounted to $125.00. This low cost has provided another program and recording channel, relieving the pressure on the other control facilities. Noise, distortion, and frequency response characteristics will meet FCC specifications for radio broadcasting stations.

COMING EVENTS

March 23–26—Institute of Radio Engineers, convention. Waldorf-Astoria Hotel, New York City. Held in conjunction with

March 23–26—1953 Radio Engineering Show. Grand Central Palace, New York City. See page 38 for details.

April 28–May 1—Seventh Annual National Association of Radio and Television Broadcasters' convention and 1953 Broadcast Engineering Conference. Burdette Hall, Philharmonic Auditorium, Los Angeles.

April 28–May 1—1953 Electronic Components Symposium. Presented through cooperation of AIEE, IRE, RTMA, and WCEMA. Shakespeare Club, Pasadena, California.

May 7–9—Forty-fifth Meeting of the Acoustical Society of America. Warwick Hotel, Philadelphia, Penna. Featured subject: Sound Reproduction Side trip to RCA Laboratories, Princeton, N. J., on May 8.

May 18–21—1953 Electronic Parts Show. Conrad Hilton Hotel, Chicago.

August 19–21—Western Electronic Show and Convention, sponsored jointly by WCEMA and Western Sections of IRE. Municipal Auditorium, San Francisco, California.

September 1–3—International Sight and Sound Exposition, combined with the Chicago Audio Fair. Palmer House, Chicago, Ill.

October 14–17—Fifth Annual Convention of the Audio Engineering Society, and The Audio Fair. Hotel New Yorker, New York City.

October 15–17—Acoustical Society of America. Cleveland, Ohio.