



RADIO NOTES

AMERICAN TELEPHONE AND TELEGRAPH COMPANY

Volume 15, No. 3

March 25, 1960

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Attached - Map of Broadband Microwave Relay Systems
(Bell and Connecting Routes)

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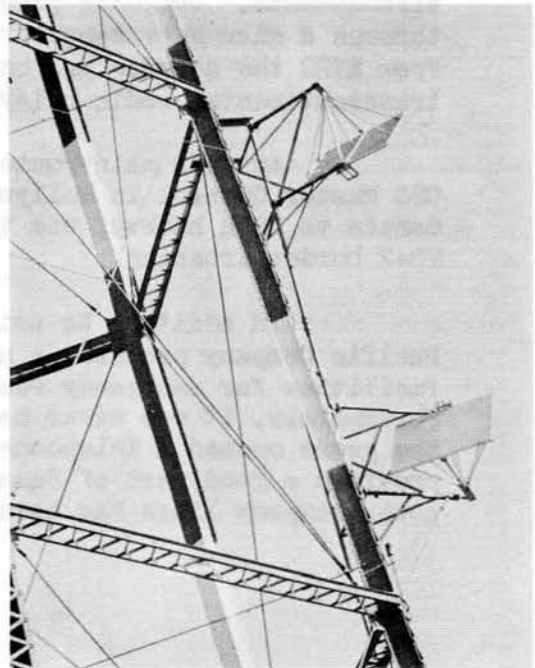
1. COMMUNICATIONS FOR PRESIDENT'S TRIP

Long Lines assisted the White House Press Section, in cooperation with the I.T. & T., by providing additional communications facilities between Brasilia, the future Capital City of Brazil, and Rio de Janeiro during President Eisenhower's visit February 23-24. The principal task was to provide a 600-mile high frequency radio system carrying 8 duplex teletype channels for use by the press during the President's brief visit in Brasilia. All engineering, installation and plant functions were performed by a special task force of Bell people.

A regular and spare radio channel using LE type equipment was used to span the 600 miles between Brasilia and Rio. 43A1 carrier channels with frequency diversity within the audio channel were applied to the radio system to derive the required teletype channels. Six ED type VHF emergency terminals were loaned by the New England Company for providing backup facilities to the entrance links of the radio system. About 14 tons of Telephone Company radio and terminal equipment was air shipped to South American locations from points all over the U.S. to cover this event. The special terminal equipment was assembled and tested at New York in a "round the clock" operation, doing in two weeks what would normally take several months.

2. PASSIVE REPEATER IN MARYLAND

We recently reported the establishment of a medical closed circuit color network between various military hospitals in and around the Washington, D. C. area in the December 21, 1959 issue of RADIO NOTES. In laying out one of these circuits, C. & P. of Maryland engineers found it desirable to install a double reflector (shown in photograph) on an existing water tower at the receiving end of the circuit. By this passive means the incoming signal from the transmitter 15.5 miles away is deflected 12 degrees horizontally and 7 degrees vertically to a receiving antenna at rooftop level 800 feet away. Two standard Andrew 6 x 8 reflectors separated by 22 feet at about the 100 foot water tower level did the job.



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Complexity in the initial adjustment of the double reflectors was minimized by treating the microwave hop as two separate sections. A portable microwave receiver was temporarily installed at the tower base for aligning the receiving reflector (top) to the transmitter 15.5 miles away. The lower reflector was then aligned by optical means. Final alignment was made with the normal microwave signal utilizing limiter current reading at the receiver terminal. There was about a 2 db differential between computed and measured received signal levels after final alignments were performed.

The optical alignment of the lower reflector mentioned above was accomplished by installing a 9 inch red bulls-eye with a 3 inch black center at the center of the upper reflector face. An inexpensive 12 x 16 inch mirror was then mounted at the center of the lower reflector surface. Using a 60 power telescope at the receiver terminal 800 feet away, it was then possible to align the lower reflector until the red and black bulls-eye was optically centered in the mirror.

3. WINTER OLYMPIC TV COVERAGE

The Pacific Company provided a number of local video facilities for CBS and CBC network coverage of the Winter Olympics in Squaw Valley California. The microwave radio portion of these facilities consisted of eleven portable RCA and Raytheon links operated in one and two hop arrangements. Outgoing programs were relayed from the floor of Squaw Valley through a microwave repeater location on top of the Giant Slalom Hill, KT22. From KT22 the service was beamed to Mount Rose, a TD-2 station on the main transcontinental radio relay route.

At this main route junction CBS programs were directed west to CBS Master Control in Hollywood. The Canadian Broadcasting Company program, Canada vs USSR hockey, was transmitted east entering Canada at the Buffalo TD-2 border crossing.

In addition to using microwave radio for television service the Pacific Company prepared a plan for using some of the microwave radio TV facilities for emergency restoration of telephone cable failures if required. Fortunately, it was never necessary to execute this plan. However, before the games opened a Telephone Company 20 kw emergency engine alternator provided a good part of Squaw Valley with power for about two days. Local power company lines had been knocked down by a tree.

4. FAA TO REPLACE ACC AS ANTENNA CLEARANCE AUTHORITY

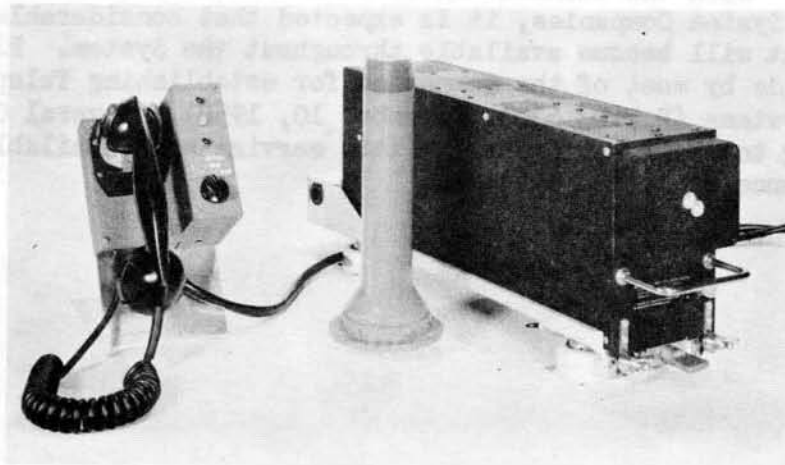
For a number of years, the Airspace Subcommittee of the Air Coordinating Committee (ACC) has been the authority responsible for approving antenna clearances when special aeronautical study of antenna heights is necessary. The Federal Aviation Agency (FAA), in keeping with its responsibility of regulating navigable airspace, has recommended abolishment of the ACC and has released proposed "FAA Procedures For Special Aeronautical Study of Radio and TV Antenna Structures" which would make the FAA the agency which will consider possible hazards to air navigation.

In connection with the above, the F.C.C. has released a Notice of Proposed Rule Making which would amend Part 17 of the Commission's Rules to substitute the name of the FAA wherever reference is made to the Airspace Committee of the ACC. We have commented on this proposed rule making on behalf of the Bell System Companies recommending in particular that the FAA procedures provide for clearance of antenna structures prior to submitting applications to the F.C.C. and that the same informal procedures followed under the ACC be continued under the FAA.

We will advise the Companies by letter or P.E.L. of the details and the effective date of the changeover when final rule making is adopted by the Commission.

5. FREQUENCIES FOR PUBLIC AIR-GROUND SERVICE

Regular frequencies for public air-ground telephone service will become available on April 1, 1960 when the F.C.C. makes effective its rules which provide for this service in the 454-455 mc and 459-460 mc Domestic Public Mobile Bands. This Commission action allocates the frequencies under Part 2 of its Rules. Further rule making will follow to establish service rules under Part 21. Trial service using frequencies in these bands has been provided under development authorization since September 15, 1957 with ground stations at Chicago and Detroit. Some 20 aircraft participated in this activity, including six commercial airliners.



Work is currently in progress with the installation of additional ground stations at Pittsburgh, Washington and Newark, which will be ready for service in July or August of this year. (RADIO NOTES, January 26, 1960) A two-channel plan will be employed initially using the QM channel at Chicago, Pittsburgh and New York and the QX channel at Detroit and Washington. Additional channels will be incorporated in the system as the service grows.

Airborne units used during the trial were manufactured by the AC Spark Plug Division of General Motors Corporation. The photograph shows this unit together with control head and aircraft antenna. It is expected that units of similar design will be supplied for the regular service.

6. CONELRAD DRILL

The Federal Communications Commission has notified all AM, FM and TV broadcast stations that a daytime CONELRAD drill will be conducted on Tuesday, May 3 as part of OCDM's "Operation Alert, 1960". It will continue for 30 minutes and start in the different time zones as follows:

1 PM EST (2 PM EDT)
12 N CST (1 PM CDST)
11 AM MST (12 N MDST)
10 AM PST (11 AM PDST)

Participation is mandatory for all broadcasting stations. Other classes of radio stations licensed by the Commission will not be required to take part. Some Bell Company locations may wish to take advantage of this drill period to observe the operation of their CONELRAD receivers and associated alerting arrangements.

The normal CONELRAD alerting sequence will not be used to begin this drill. A recent F.C.C. Public Notice covers the details of this drill.

7. REUSE OF EQUIPMENT FOR MAINTENANCE SYSTEMS

With the termination of lease-maintenance mobile radio business by Bell System Companies, it is expected that considerable spare mobile equipment will become available throughout the System. Plans are currently being made by most of the Companies for establishing Telephone Maintenance Radio Systems (P.E.L. 6306, November 10, 1958). Several Companies are planning to reuse equipment for this service made available by the discontinuance of leased systems.

Equipment for the Telephone Maintenance Service must meet narrow band requirements (P.E.L. 6300, August 6, 1958). Information concerning conversion of G.E. equipment is covered in P.E.L. 6396, dated April 1, 1959 and for conversion of Motorola equipment in P.E.L. 6350 dated February 17, 1959. In general, converting the transmitter is relatively simple and inexpensive while the major effort and expense is incurred in converting the receiver. Therefore, you may wish to convert only the transmitter and leave the receiver wide band if noise and interference considerations permit. Monitoring observations made on the channel in the proposed operating area with a wide band receiver would help determine whether or not satisfactory service could be expected without converting the receivers.

8. OVERSEAS RADIOTELEPHONE IMPROVEMENTS

Notwithstanding the substantial number of cable circuits now in use for overseas telephony, radio facilities still provide the only service to many areas of the world and in addition are used along with the cable circuits to handle traffic to points served by cable. As a result, improvements are continuing to be made in the radio circuits.

The latest improvements made or scheduled for completion by April are:

In New York-Bermuda service - installation at Lawrenceville, N.J. of a LD-T2 transmitter to replace a LC-type which recently has been required to carry 4 telephone channels. The LD-T2 is suitable for 4-channel operation by design, whereas the LC is adequate for only 3 channels.

In Trans-Pacific services - installation at Dixon, California of 5 LD-T2 transmitters with associated 30 KW Westinghouse amplifiers, to provide more adequate service and improved transmission to Honolulu, Seoul and Tokyo. (Two LC transmitters are being removed in connection with this project.)

In addition, a new LD-T2 transmitter is being installed at Lawrenceville and another at Ocean Gate, New Jersey for use as maintenance spares.

The 30 kw Westinghouse amplifiers referred to above will bring to 20 the number of such units installed at the overseas station during the past two years.

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9. RADIO SECTION MOVE

Because extensive building alterations will be made on the 17th floor here at 195, the entire Radio Section will move into temporary quarters on the 12th floor for a period of about 17 weeks. Our new location will be in the south west corner of the building 5 floors directly below the present location. The exact move date has not been set; however, it appears the move will take place during the latter part of April. Telephone extension numbers will not change during this interim period.

10. RADIO INFORMATION

The following have been forwarded since the last issue of
RADIO NOTES:

BSPM 705A -

BSPM 706 R00.030, Issue 5 - Alphabetical Index to General
Letters and B.S.P.'s in the Radio
Series

R06.020, Issue 4 - Mobile Telephone Service - Service
Centers and Repair Service Bureaus

357-000-000, Issue 1 - Numerical Index - Division 357 - Wire
Line Entrance Links for Interconnection
of Radio and Carrier Telephone Systems

CANCELLED SECTIONS

R90.860, Issue 1 - Type A Wire Line Entrance Link for
Interconnection of TD-2 Radio and
L-1 Carrier Facilities

R90.870, Issue 1 - Type B Wire Line Entrance Link for
Interconnection of TD-2 Radio and
L-1 Carrier Facilities

R90.880, Issue 1 - Type C Wire Line Entrance Link for
Interconnection of TD-2 Radio and
L-1 Carrier Facilities

BSPM 706A -

BSPM 707 -

BSPM 707A -

BSPM 708	R90.334.06, Issue 1 - TJ Radio System - Waveguide Component Insertion Losses
BSPM 708A	-
BSPM 709	R90.335.06, Issue 1 - TJ Radio System - Auxiliary Bay A309.514.08, Issue 4 - Labor Units - Radio Equipment - Forms E-4408A, E-4408B and E4408C
BSPM 709A	-
P.E.L. 6615	Mobile Telephone Service - Narrow Band 150-160 Mc Base Station Receivers (1S3.2-59)
P.E.L. 6616	Radar Interference - Weather Bureau Radar Tests (1S3.12-39)
P.E.L. 6624	Television - Raytheon KTR 1000 Instruction Manuals (1S3.9F-84)
P.E.L. 6617	Distribution of F.C.C. Equipment List (1S4.1-223)
P.E.M. 7160	Lenkurt Drawings for Telephone Company Engineering Reference File

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