

RADIO NOTES

AMERICAN TELEPHONE AND TELEGRAPH COMPANY

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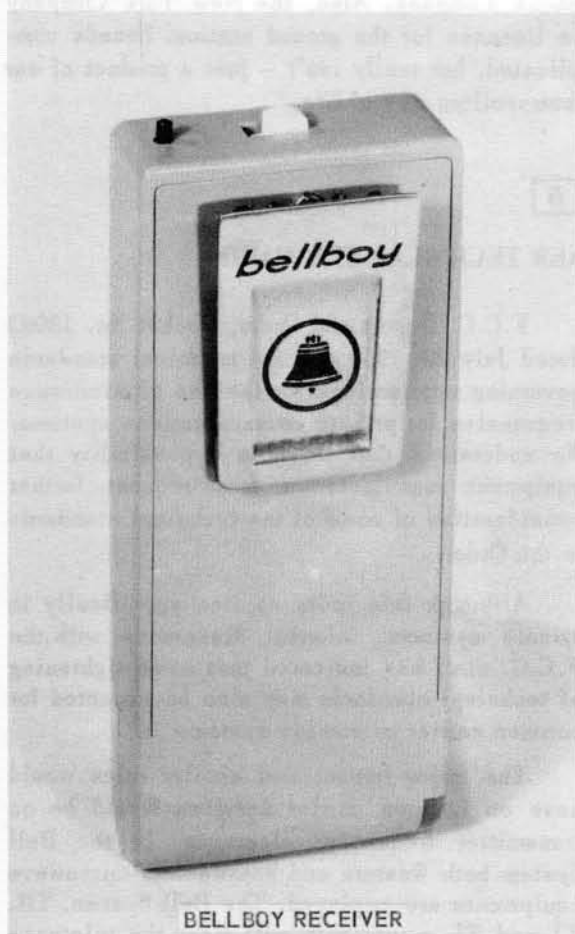
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150 MC "BELLBOY" TRIAL STARTS IN NEW YORK CITY

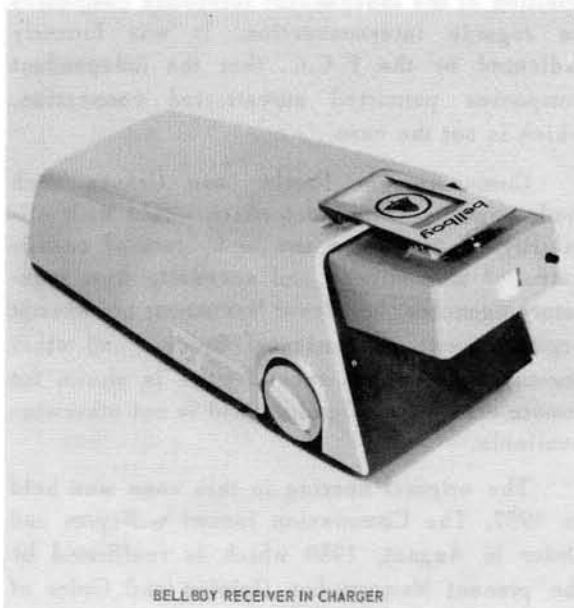
On October 5 the first of about fifty trial customers was provided 150 mc BELLBOY Personal Signaling Service in New York City. A description of this system was given in RADIO NOTES, November 25, 1959. Direct dialing of the pocket sized receivers can be made from stations through any central office in the service area which extends from Central Park (59th Street) to the southern tip of Manhattan. No charge will be made for the service during the six month trial period. The trial is being conducted by the Laboratories with the assistance of the New York Telephone Company, and A.T.&T. Headquarters people.



BELLBOY RECEIVER

Two models of the frequency modulated 150 mc BELLBOY receiver will be evaluated during the trial. One uses a replaceable mercury battery which will operate the receiver for about 120 hours. The other model uses a rechargeable nickel-cadmium battery which must be recharged

after about 10 hours of use. A minimum of 12 hours are required to recharge the battery by means of a charger which is provided for use in the house or office. The BELLBOY receiver and charger are shown in the photographs.



BELLBOY RECEIVER IN CHARGER

At the mid-point in the trial each customer will have his BELLBOY receiver exchanged for the other model. This will allow all customers to comment on the use of both replaceable and rechargeable battery type of receiver.

Later in the trial an attachment will be available for extending the signaling range of the BELLBOY receiver when used in an automobile. This apparatus will connect the car's antenna and battery to the rechargeable model BELLBOY by placing the set in a type of holster mounted under the instrument panel. It is planned to equip about five cars for trial.

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F.C.C. FINAL REPORT IN "ABOVE 890 MC CASE"

The Federal Communications Commission closed its proceeding "Allocation of Frequencies in the Bands Above 890 MC - Docket 11866" by issuing a Memorandum Opinion and Order on October 5, 1960.

This release, with two exceptions, reaffirms an earlier order and opens the way for unrestricted licensing of private microwave systems operating

in the radio spectrum above 890 mc. The exceptions provide for intercity educational TV programs to share frequencies in the 6575-6875 mc band which have been allocated for many years by private microwave systems; and a restatement of a previous F.C.C. decision to clarify the position of the independent telephone companies as regards interconnection. It was formerly indicated by the F.C.C. that the independent companies permitted unrestricted connection, which is not the case.

Commissioners Bartley and Craven each made minority statements which would limit eligibility of microwave use to holders of certificates of convenience and necessity from regulatory agencies; broadcast licensees; tax exempt organizations; governmental bodies; and other organizations where special need is shown for remote area communications and is not otherwise available.

The original hearing in this case was held in 1957. The Commission issued a Report and Order in August, 1959 which is reaffirmed by the present Memorandum Opinion and Order of October, 1960. The Bell System petitioned for reconsideration of the August, 1959 Order. This was granted and the Commission temporarily withheld any action looking toward the implementation of the policies and determinations it had made. In response to the A.T. & T. petition, the Commission on May 18, 1960 ordered the re-opening of the record to receive data and information as to the frequency needs for space communications, and a hearing on this matter was held in July, 1960.

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RURAL SERVICE AT CASPER

The Mountain States Company was recently granted a construction permit to provide a central office radio station at Casper, Wyoming for fixed rural subscribers. This is the first operation in the Bell System of this type. It required a waiver of the Rules to permit use of an omnidirectional antenna at the central office station.

Previous to this grant, service to twelve customers was provided on a rural subscriber basis from the general mobile station. Since these customers are located in remote areas around Casper in several different directions from the central office, this was the only type of service available. Requests for mobile service

in Casper have increased in recent months. It was decided that better service could be furnished to the rural customers by assigning them a separate channel (JL).

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CLEARING THE AIR ON AIR-GROUND

The item concerning air-ground service which appeared in the last issue of RADIO NOTES dated September 28, 1960 neglected to mention that the ground station which provides service in the New York area is located in Newark, New Jersey and is being furnished and maintained by the New Jersey Bell Telephone Company. (We hope our many New Jersey Company readers will forgive this omission.) The control terminal and aviation switchboard is located in New York and is provided by the New York Telephone Company. Also, the New York Company is licensee for the ground station. Sounds complicated, but really isn't - just a product of our metropolitan way of life.

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NEW TECHNICAL STANDARDS

F.C.C. Report and Order, Docket No. 13083 dated July 20, 1960 covered technical standards governing applications for the use of microwave frequencies for private communications systems. We understand that there is a possibility that equipment manufacturers may request further consideration of some of the technical standards in the Order.

Although this order applies specifically to private systems, informal discussion with the F.C.C. staff has indicated that some tightening of technical standards may also be expected for common carrier microwave systems.

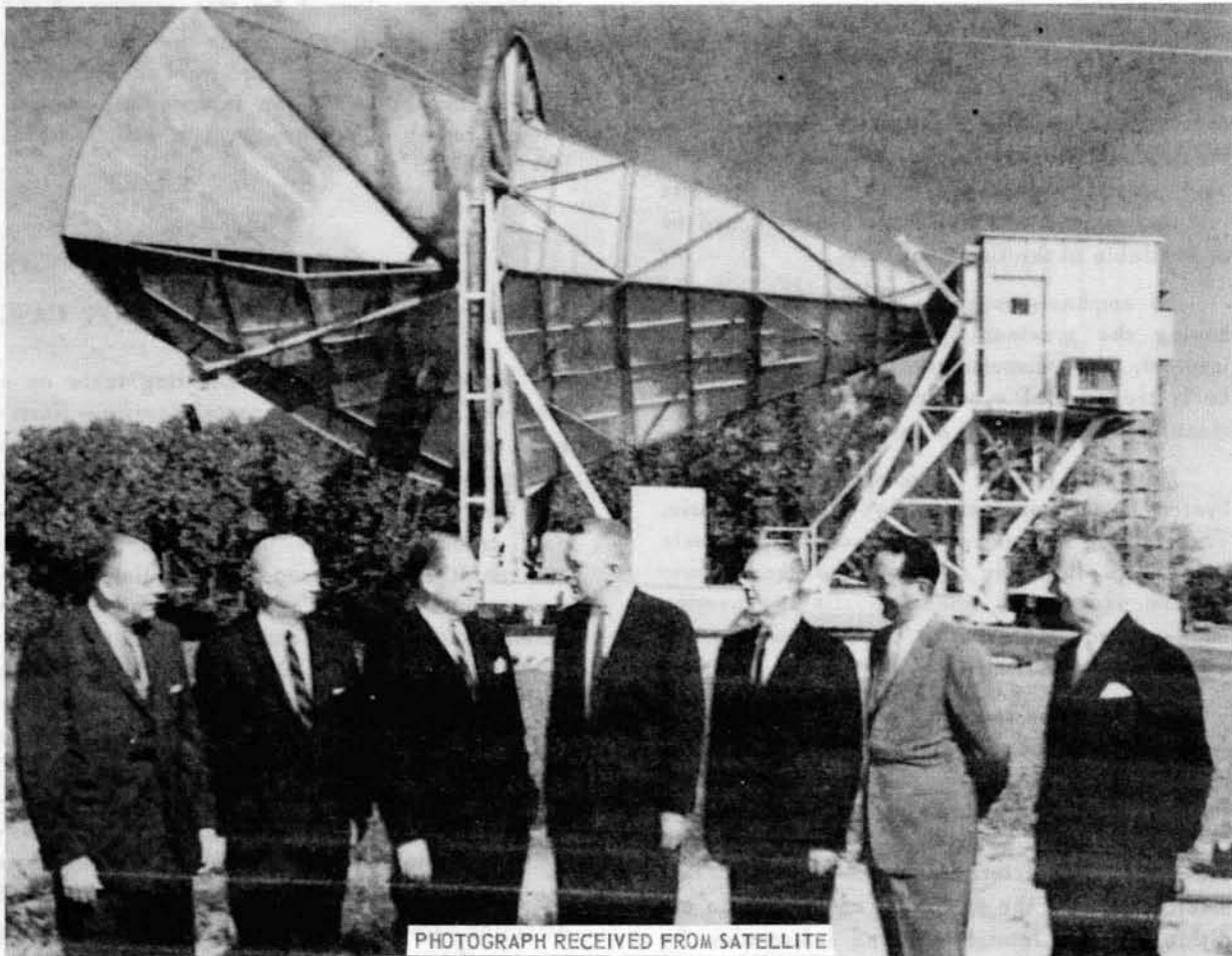
The major impact that similar rules would have on common carrier services would be on transmitter frequency tolerances. In the Bell System both Western and non-Western microwave equipments are employed. The Bell System, TH, TJ and TL equipments will meet the tolerance of .02% for 6 kmc and .05% for the 12 kmc which have been established in the new rules for private systems. Improvements in the TD-2 FM transmitter frequency stability are planned which will enable the TD-2 system to maintain a stability within .02% at 4 kmc.

In the case of non-Western equipments, many of the systems now in service will not meet the .02% requirement. However, it would be expected that a "grandfather" clause would be included in any new Common Carrier Technical Standards whereby existing transmitters would be permitted

to continue in service for some reasonable period on a non-interfering basis even if they do not meet the new tolerance requirements.

This matter is undergoing further discussion with the F.C.C. and recommendations on action will be developed.

* * * * *



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PICTURE BOUNCED OFF ECHO

Members of the Federal Communications Commission are shown here with T. Keith Glennan, Administrator of the National Aeronautics and Space Administration, in a photo transmitted via NASA's Echo I satellite. This picture was taken at the Bell Telephone Laboratories in Holmdel, N.J. on September 22, 1960 where the group observed satellite communications first hand. The photo was transmitted by land-line from Holmdel

to the U.S. Naval Research Laboratory at Stump Neck, Md., and then bounced off the Echo satellite back to Holmdel. Left to right are Commissioners John S. Cross and Rosel H. Hyde, Dr. Glennan of NASA, Frederick W. Ford, chairman of F.C.C., Commissioners Robert T. Bartley, Robert E. Lee and T.A.M. Craven. The Horn antenna shown in the background was used to receive the picture. Photo transmission equipment for the experiment was obtained through the cooperation of the Associated Press, United Press International and Times Facsimile Corp.

BSP's AND FIELD INFORMATION ON RADIO EQUIPMENTS

Numerous requests are received from the Companies for new R Series Bell System Practices on various radio subjects. These requests along with comments on existing practices serve as helpful guides for our BSP preparation program.

Each suggestion — whether a request or comment — is given thorough consideration. Many of these requests materialize into new practices or affect existing sections. However, it is not practical to fill all requests or to otherwise prepare practices on every radio item. There are just too many kinds and models being used by or available to the Companies.

So emphasis must be placed on practices having the greatest Systemwide demand and interest. More importantly, our objective must be to prepare BSP's on items for which suitable manufacturer's manuals are not available.

Much of the radio equipment used in the Bell System is not manufactured by Western Electric. This is true for test sets as well as the basic radio units. In nearly all cases the manufacturer has an instruction manual available covering each product. Frequently, this manual is suitable as a substitute for a standard practice.

For radio or test equipments having satisfactory manufacturer's manuals, we are preparing or planning to prepare reference type practices. We have done this to some degree in the past by attaching instruction manuals to transmittal-type practices. The future reference-type BSP will briefly describe the particular equipment. In addition, it will furnish ordering information for the manufacturer's manuals which will be considered the detailed instructions. Companies desiring the instruction manuals may then obtain current issues when needed. Those areas not concerned with the equipment will, therefore, not be burdened with the cost or file space for unnecessary instruction manuals.

This method of transmitting information to the field is being expanded and improved by working with certain manufacturer's in the preparation of their manuals. These manufacturers are attempting to meet our needs in their manuals and, in some cases, are submitting draft copies of the manuals for our comments. All of this is being done in the interest of reducing duplication of instruction preparation.

NEW IOWA MICROWAVE SYSTEM

The Northwestern Company is planning a 6-hop microwave system for telephone service between Davenport and Keokuk, Iowa. The 4-hop section between Davenport and Burlington is the first TD-2 system to be installed by the Iowa area. Parabolic antennas and Collins baseband combiners are planned for this section. A TJ system will provide service on the remaining 2-hops between Burlington and Keokuk with dropping at the Fort Madison intermediate station. Overall length of the new system will be about 103 miles.

A TD-2 FOREGROUND REFLECTION CASE

While making antenna coupling tests on a proposed TD-2 interstitial route, Pacific — Northwest radio engineers discovered that excessive foreground reflection was caused by a nearby hill that was being used to block a severe mid-path ground reflection. Foreground reflections can result in low side-to-side coupling loss between antennas. For interstitial operation the antenna coupling loss must be kept high to prevent adjacent channel interference. The hill in the immediate foreground was covered with low sage brush and grass. When the vegetation was removed from a 200 x 1000 foot strip in front of the antennas, the side-to-side coupling loss between antennas increased 11 db. This improvement was obtained because energy reflected from the nearby cleared hill is now in the forward direction rather than being reflected by standing brush and vegetation in the reverse direction into the receiving antenna.

Apparently, removal of the brush caused no ill effects on the desired signals. Future growth in the cleared area will be controlled by chemical sterilization of the soil.

OATH ELIMINATED ON SECTION 214 APPLICATIONS

The F.C.C. has recently amended its Rules and Regulations to eliminate the requirement of an oath or affirmation in the signing of applications filed under Title II of the Communications Act. This means that the form of oath need not

be executed on requests to supplement existing interstate facilities filed in accordance with Section 214 of the Communications Act. There is no change in the way radio applications are to be handled which are filed under Title III. The details are covered in P.E.L. 6738.

11

DX ON VHF

During the latter part of September unusual VHF radio propagation conditions were encountered. Amateur radio operators chalked up record long distance contacts while commercial operations suffered interference hardships during this period.

One such interference case was particularly annoying to the New England Company at Worcester, Massachusetts. Here the JR Mobile Radio channel was rendered useless for most of the day on September 27. After considerable

monitoring, the source of interference was identified as a system operating out of St. John, New Brunswick about 500 miles to the northeast. This is a private system with three base stations using both JR frequencies. The interfering circuit was very active during daylight hours, and identification was made difficult by the French speaking talkers. Operations returned to normal the following day at Worcester; however, as the local people said, "It died hard." Interference of this severity is not normally encountered in the Worcester area.

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ORGANIZATION CHANGE

Elaine Saraceno of the Special Projects Radio Engineering group assumed the married name of Mrs. Vreeland on October 2. She will continue to answer your questions and fill requests regarding RADIO NOTES distribution.

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RADIO INFORMATION

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

BSPM 735

R40.456.00, Issue 2 – KS-15676 Horn-Reflector Antenna and Associated Outdoor Waveguide System – General

R40.456.11, Issue 3 – Antenna Assembly

R40.456.12, Issue 3 – Antenna Installation

R40.456.13, Issue 2 – Circular Waveguide and Transducer or 11A Directional Coupler Installation

R40.456.14, Issue 1 – Circular Waveguide and Systems Combining Networks Installation

R40.456.15, Issue 1 – Rectangular Waveguide Installation

R40.456.18, Issue 2 – Supplementary Drawings

R60.480.00, Issue 1 – J68349F IF Bridging Amplifier (TD-2 Radio System) (General)

R60.482.00, Issue 1 – J68349F IF Bridging Amplifier (TD-2 Radio System) (Operating Methods)

R60.483.00, Issue 1 – J68349F IF Bridging Amplifier (TD-2 Radio System) (Maintenance Routines)

R60.484.00, Issue 1 – J68349F IF Bridging Amplifier (TD-2 Radio System) (Maintenance Methods)

- R60.484.01, Issue 1 – Voltage Checks
- R60.484.02, Issue 1 – Impedance Measurements and Adjustments at Main and Terminal Stations
- R60.484.03, Issue 1 – Impedance Measurements and Adjustments at Auxiliary Stations
- R60.484.04, Issue 1 – Transmission Measurements and Adjustments at Main and Terminal Stations
- R60.484.05, Issue 1 – Transmission Measurements and Adjustments at Auxiliary Stations
- R60.484.06, Issue 1 – Procedure for Replacing Inductors L1 and L7
- R60.485.00, Issue 1 – J68349F IF Bridging Amplifier (TD-2 Radio System) (Description and Operating Principles)
- R70.820, Issue 2 – J68362 Video Visual Test Set
- R70.822, Issue 2 – J68362 Video Visual Test Set

CANCELLED SECTIONS

- R40.456.10, Issue 1 – KS-15676 Horn-Reflector Antenna and Associated Outdoor Waveguide System
- R60.480, Issue 1 – J68349F IF Bridging Amplifier (General)
- R60.482, Issue 1 – J68349F IF Bridging Amplifier (Operating Methods)
- R60.483, Issue 1 – J68349F IF Bridging Amplifier (Maintenance Routines)
- R60.484, Issue 1 – J68349F IF Bridging Amplifier (Maintenance Methods)
- R60.485, Issue 1 – J68349F IF Bridging Amplifier (Description and Operating Principles)

Addendum

- A 309.514.18, E12.170.2, Issue 1 – Labor Units – Toll Testing – Telegraph, Program Video and Overseas Radio – Form E-4418
- AA266.078, Issue 1 – TH Radio – FM Terminal Test Set – Toll Systems
- BSPM 736 –
- BSPM 736A –
- BSPM 737 –
- AA266.067, Issue 1 – TH Radio System – General Requirements – Toll Systems
- BSPM 737A –
- BSPM 737B –
- BSPM 738 –
- R00.010, Issue 14 – Numerical Index and Checking List

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- BSPM 737B –
- BSPM 738 –
- R00.010, Issue 14 – Numerical Index and Checking List

BSPM 738A	-	
BSPM 739	-	
R20.730,	Issue 1 - Stromberg-Carlson Model TR-308 Radio Receiver - General	<i>and 11-22-60 KB</i>
R20.733,	Issue 1 - Maintenance Routines	
R20.734,	Issue 1 - Maintenance Methods	
R20.735,	Issue 1 - Description and Operating Principles	
R60.610	Issue 1 - ERCO Type 2040 Carrier-On Monitor	<i>and 11-22-60 KB</i>
BSPM 739A	-	

Unnumbered Letters to Marketing Department

9-23-60	Coordination of Public Air-Ground Radiotelephone Service
9-30-60	"Outselling Microwave Competition" - Training Book

Unnumbered Letter to Certain Transmission Engineers and Plant Managers

10-7-60	Mobile Telephone Service - Improved Cover for ED-45596-30 Power and Telephone Line Filter Box (1S3.1-100)	<i>10/22/60 - WSF will get copy for HLF</i>
P.E.L. 6738	FCC Title II Applications - Amendment of Rules to Eliminate Oath or Affirmation Requirement (1S4.1-228)	
P.E.L. 6737	Renewal of Point-to-Point Microwave and Local Television Transmission Service Licenses (1S4.1-229)	
P.E.L. 6748	TL Radio System - Circuit Capacity	
P.E.L. 6741	TD-2 Microwave Systems - New Ten-Foot Parabolic Antenna for Secondary Routes (1S3.4-132)	
P.E.M. 7391	Mobile Telephone Service - Pole or Wall Mount Base Station Equipment Cabinet (1S3.6-78)	
P.E.M. 7388 10-11-60	TJ Radio System - Receiver Linearity Measurements Chief Engineers (1S3-95-16)	

Unnumbered Letters to Chief Engineers

10-13-60	Public Radiotelephone Service to Aircraft - Revision of Proposed Ground-to-Air Signaling Code
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Unnumbered Letters to Commercial Engineers

9-15-60	F.A.A. - Remote Operations and Control Channels for Private Mobile Radio Systems
9-14-60	Miscellaneous Common Carriers - National Mobile Radio System Convention