



RADIO NOTES

AMERICAN TELEPHONE AND TELEGRAPH COMPANY

Volume 14, No. 8

August 28, 1959

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Attached - Map of Mobile Telephone Service

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1. "ABOVE 890 MC" F.C.C. ACTIONS

The F.C.C. recently issued a Report and Order concluding the fact finding hearing to review service allocations above 890 mc (Docket 11866) which has been underway since 1956. Several A.T. & T. and Bell Telephone Laboratories witnesses presented written and oral testimony in behalf of the Bell System during the hearings. (RADIO NOTES, April 15, 1957)

Some of the most important F.C.C. policy determinations are as follows:

1. Adequate frequencies are now available above 890 mc for use by both common carriers and private users.
2. There is no basis from the record for concluding that the licensing of private systems would adversely affect the ability of common carriers to provide service to the general public.
3. The availability of common carrier facilities will no longer be a consideration in applications by private users.
4. Sharing of frequency bands by private users and common carriers is neither feasible nor desirable; however, exceptions are made in allocations for the bands 942-952 and 2110-2200 mc.
5. With certain exceptions, cooperative use of private microwave systems will not be authorized.

Rule making to implement these policies will be forthcoming but in some cases may be held in abeyance until after the International Radio Conference being held in Geneva this summer.

Consideration is being given to the filing of a petition for reconsideration.

2. COMMUNICATIONS FOR ROYAL VISIT

Queen Elizabeth and Prince Philip visited Canada during June and July to officially open the St. Lawrence Seaway and tour the Canadian Provinces. A one-day visit on July 6 to Chicago was included in the tour.

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The Queen and the Prince travelled by aircraft, special train, and in their private yacht Britannia. Bell of Canada facilities were provided for connection to the telephone network at all scheduled stops on the railway and when on board the royal yacht. Railway cars were equipped with telephone sets and weatherproof jacks into which flexible leads from exchange pairs could be plugged at all required locations. Similar arrangements were made to connect to the yacht when along side a dock, and to some of the aircraft when on a ramp. The Royal Yacht was equipped with radiotelephone for long haul high seas communications. VHF radio for short range use was available with a portable terminal which was landed and set up as near as possible to the shore exchange.

For the one-day visit to Chicago, the Illinois Company established many special communications facilities. In addition to supplementary wire-line telephone services to accommodate the viewing public and the press, special radio facilities were installed. These were used to furnish essential message circuits to official vessels in the harbor and to provide radio-television broadcast coverage of the event.

Unique ship-to-shore service was established for the Royal Yacht Britannia during its fourteen-hour stay at Chicago. The shore radio equipment, as well as the mobile installation, was provided by the Royal Navy and was brought ashore from the yacht upon its arrival in Chicago harbor. Unlike that used in the frequency-modulated VHF Maritime Services, this VHF equipment was amplitude-modulated and operated full duplex. The connection to the land-line telephone network was made through a dispatch terminal at the mobile operator's switchboard. A special "Royal Tour" operator was assigned to the switchboard for handling calls to and from the yacht. Special temporary authority was obtained from the F.C.C. authorizing operation of the shore radio equipment. The Telephone Company also provided licensed personnel to attend the equipment while in operation. During the twelve-hour service period, forty-seven calls were completed.

Regular VHF Maritime Service was provided to Destroyer "Lee", leader of the United States Navy task group in the Chicago harbor. Service was furnished by installing a General Electric MC-271-WE6 multi-channel maritime set in the staff room permitting operation on public correspondence channels "XY" and "XJ", safety-calling frequency, and the intership frequency. The task group commander commented that maritime radio service, through direct connection with the public telephone network, played a vital role in the success of the whole operation.

The Illinois Company was asked to provide eight video channels during Queen Elizabeths visit to Chicago. In general, these were used by four local broadcasters on a pool basis. Five were wire circuits, two were a combination of wire and microwave and one was strictly a microwave circuit. A2A video equipment was used on all wire circuits.

The microwave circuit between the Buckingham Fountain area where the Queen landed and the Sheraton Towers consisted of a Raytheon KTR 1000A and a Raytheon KTR 100F. The 100F operating in the 12 KMC band was used for back-up. The purpose of the microwave circuit between 333 North Michigan and the Sheraton Towers was interesting in that it was fed partly by a broadcasters mobile microwave system. The transmitter for this system was mounted in a car and aimed at the top of 333 North Michigan providing a close-up of the Queen en route.

Temporary microwave TV links were set up at Montreal, Cornwall, Toronto, and Ottawa for service to the Canadian Broadcasting Corporation. At Montreal it was necessary to erect two 65 foot towers to ensure continuity of transmission during the few seconds that the Britannia passed through an obstructed radio path.

3. SECOND TH RADIO RELAY ROUTE PLANNED

The Long Lines has announced plans to install a TH microwave radio relay system on the existing TD-2 express route between Colesville, New Jersey and Jennerstown, Pennsylvania for service starting in November 1960. This is the second TH system on which construction work is being actively undertaken, the first one being the trial installation between Prospect Valley (near Denver) and East Bench (Salt Lake City) which is also scheduled for commercial service in November 1960.

The Colesville-Jennerstown system includes 9 sections totaling 269 route miles. With the addition of a new pair of TD-2 channels for which construction permit applications are now pending before the F.C.C., this route will be equipped with a complement of six TD-2 channels each way. The TH installation will add two broadband channels each way for telephone service and frequency diversity protection and two auxiliary channels each way for order, alarm and protection switching signals. New building additions will be required, but no major antenna or tower work is necessary on this route which is already equipped with horn reflector antennas. These new facilities are expected to provide relief on this important route which has an estimated growth potential of over 1000 circuits per year.

4. SLOT FREQUENCIES FOR TD-2 ROUTE

The use of slot frequencies (sometimes called interstitial channels) is being planned by Long Lines to augment service on the main route TD-2 system between Jennerstown, Pennsylvania and St. Louis. The new facilities will include two broadband channels for telephone and one for protection in each direction throughout the route; one westbound television channel from Troy Hill Road (near Pittsburg) to Columbus and from Dayton to St. Louis. Between Columbus and Dayton the television channel will be routed via Hopetown and Cincinnati requiring installation of one westbound television channel and one protection channel between these points. The new telephone channels will be used to connect with the proposed TH route from Colesville to Jennerstown referred to in the preceding item.

Because of problems in mounting horn reflector antennas on the downtown office building in Columbus, a by-pass via two new repeater stations will be constructed around Columbus. The use of slot frequencies will make it necessary to replace the delay lens antennas between Jennerstown and St. Louis with horn reflector antennas. This work is already underway between Terra Haute and St. Louis in connection with an east bound slot frequency television channel being installed in this section.

The Jennerstown-St. Louis additions are scheduled for service in October, 1960.

5. TRANSATLANTIC CABLE BREAK

At 6:22 p.m., Wednesday, July 22, service on the transatlantic cable to London was interrupted in the west to east direction. The fault located 62 nautical miles west of Oban, Scotland in about 300 feet of water. Government private line circuits were made good on overseas radio circuits within a two-hour period. All three twelve channel groups were made good by 5:40 a.m. the following day via the recently laid, but not in service, Paris cable. These circuits were routed from Penmarch, France (cable landing site) on cable facilities to Paris for retransmission on cable to London.

A tension break in the undersea cable proved to be the source of trouble located in an area where heavy trawling has been observed. A second break occurred during the pick-up operation. Repairs were completed and service made normal at 1:35 a.m. on July 27.

6. SERVICE TO NEW GERMAN LINER

High seas radiotelephone service was inaugurated to the new German passenger liner Bremen which terminated its maiden voyage in New York on July 16. During this first crossing 6 outgoing and 13 incoming calls were completed. This is the 59th ship currently furnishing public radiotelephone service on the Atlantic run. Although single sideband transmission is the well established trend for this and other overseas services, the Bremen is equipped for double sideband transmission only.

7. HAWAIIAN RADIOTELEPHONE CASE

RADIO NOTES of June 22, 1959 advised of the favorable F.C.C. findings in hearings on conflicting applications of A.T. & T. and RCA for authority to operate the U. S. terminal of the Oakland-Honolulu radiotelephone service. An F.C.C. Report and Order, dated August 4, 1959, has confirmed these findings formally.

8. BELLBOY PERSONAL SIGNALING SERVICE EXPANDS

Western Electric has received commitments from the Companies for a total of about 2150 pocket receivers, 24 radio transmitters and 13 control terminals (one for replacement at Allentown) for 35 mc Bellboy Personal Signaling Systems. Delivery of all items is expected to be completed by the end of this year.

The locations at which the new service will be offered are:

<u>Company</u>	<u>City</u>
New England	Boston, Massachusetts
New York	Binghamton)
	Endicott) One System
	Owego)
	Johnson City)
C. & P. - W. Virginia	Charleston
Southern	Mobile, Alabama
Ohio	Dayton
	Youngstown
	Canton
Michigan	Grand Rapids
Illinois	Springfield
Northwestern	Omaha
Southwestern	Houston
Mountain	Denver

The introduction of this service is still under study by the C. & P. of Virginia, New Jersey and Wisconsin Companies.

9. NEW COASTAL HARBOR TRANSMITTER SITE

The Pacific Company has underway a project for relocating and rearranging transmitting facilities for their San Pedro Coastal Harbor Station KOU. The old site had to be abandoned because of inadequate space and zoning restrictions. From the new location, which is approximately one-quarter mile away, coverage will be improved to more nearly conform with ship user needs. The new site also will permit a more desirable physical layout for the existing channels, as well as an additional full-time channel expected to be available in the near future.

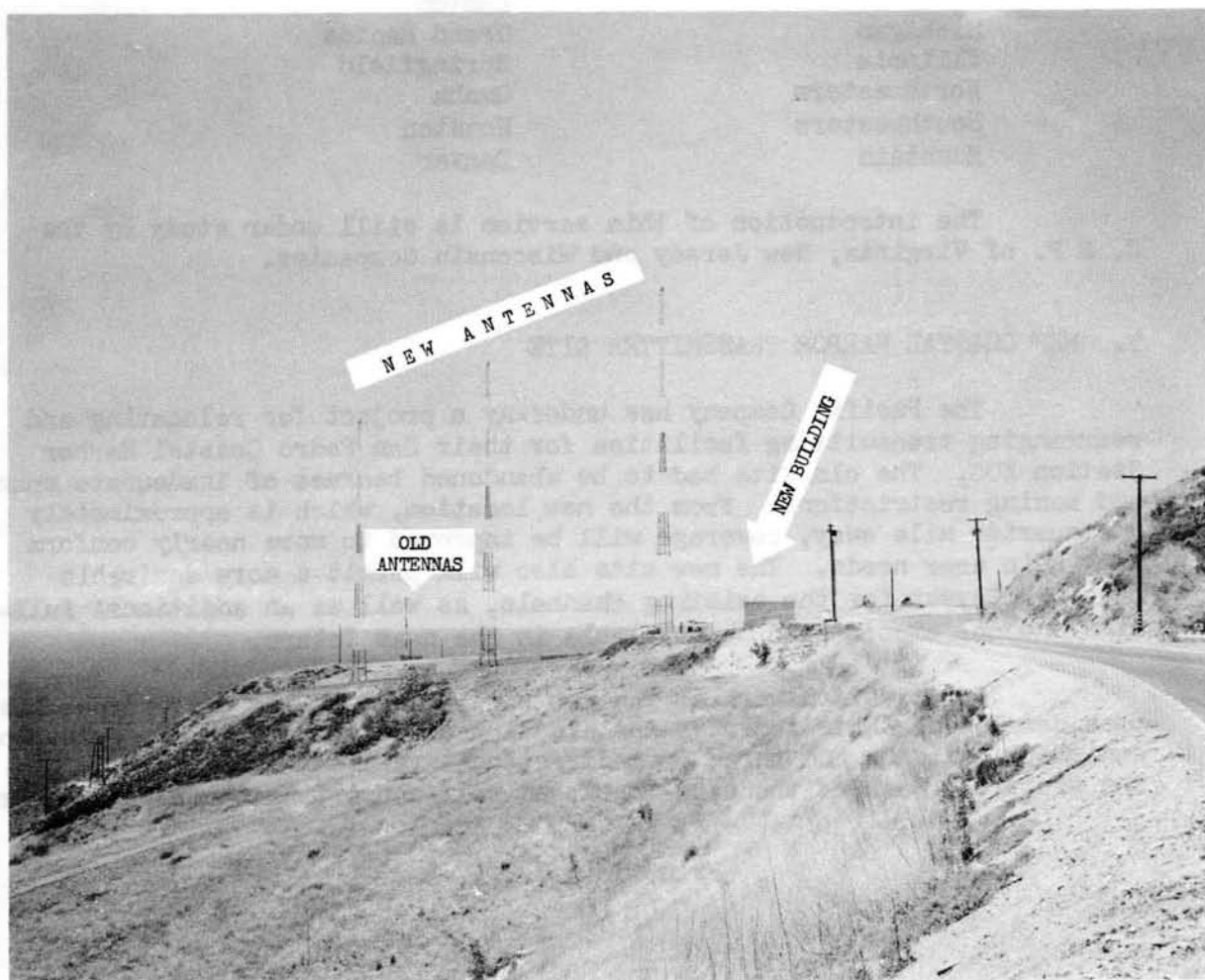
Construction work at the new site, shown in the photograph, has been completed. This includes the erection of an attractive concrete-block equipment building and three omni-directional vertical radiators visible in the picture. Each of the base-insulated self-supporting towers is approximately

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one-half wavelength or 200 feet tall. The antenna nearest the building will be fed with the two "day-only" frequencies of 2522 and 2598 kc. The other two towers will accommodate the Safety-Calling frequency 2182 kc, the "full-time" public correspondence channel 2566 kc, and the future channel when it becomes available.

Besides an emergency alternator and other auxiliary equipment, four transmitters will be housed by the new building. Of these, three will be Gates Type M-5399 Transmitters for the public correspondence channels. Two of the Gates units, which are modified 1-kilowatt broadcast transmitters, will be moved from the old site, and a new one has already been installed in the new building. The existing Western Electric 33-A transmitter assigned to the Safety-Calling frequency also will be relocated.

The new site is being prepared for relocation and gradual cut-over planned this fall. Antenna systems with the necessary filters are being completed and measurements of antenna electrical characteristics are being made. The Pacific Company expects to complete the move to the new site about November of this year.



10. I.R.E. PROFESSIONAL GROUP ON VEHICULAR COMMUNICATIONS

In a recent election, Bill Chaney, of the Mobile Radio Group, was elected to the National Administrative Committee of the Institute of Radio Engineers - Professional Group on Vehicular Communications. The fifteen-man Administrative Committee also includes Newton Monk of the Bell Telephone Laboratories.

The I.R.E. sponsors a number of these professional groups, in order to meet the specialization of its members. The P.G.V.C. has an active national membership of over 1,200 engineers in the mobile communications field. Chapters are located in twelve areas: Baltimore, Chicago, Dallas, Detroit, Florida-West Coast, Houston, Los Angeles, New York, Minneapolis-St. Paul, Omaha-Lincoln, Philadelphia, and Washington D.C.

The Vehicular Group activities include an annual two-day national conference for technical papers and displays of equipment, participation in the National I.R.E. Convention and WESCON Show, and periodic Chapter meetings. Papers offered for publication are printed in the Proceedings or appropriate Convention Record.

11. NEW FEEDS FOR TD-2 DISH ANTENNAS

A new model of feed for TD-2 8' and 10' dish antennas is being introduced. It will replace the previous broadband feed which has been found to be low in gain. (RADIO NOTES, December 15, 1958) Current orders for the old model are now being filled with the new type.

The new feed, called "Hopstretcher" by the manufacturer, is expected to provide the same gain as previously specified for the older models. Field tests on some of the first of the new production indicate a substantial improvement in side to side coupling loss between two dishes.

Two different types of feed mounting will be available. One has the same type of mounting flange as the previous style. The other, not previously available for TD-2 dishes, permits polarization adjustment to any desired angle. Preliminary information about the new feed is included in a P.E.L. to be issued soon.

Negotiations are in progress between the Western Electric Company, Bell Laboratories and the manufacturer to find a means to correct the gain deficiency in the old feeds.

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12. DELAY LENS ANTENNA BLOWER-HEATER

A field trial is in progress to test the effectiveness of blower-heater equipment for drying wet lens elements in delay lens type antennas. (RADIO NOTES, April 20, 1959) Blowers have been installed on antennas at each end of three microwave paths, and a single blower on one antenna of two other paths is also included in the trial.

The results so far are very encouraging. One path which was down about 10.5 db at the start now appears to have regained about 9 db in 3 months. Favorable weather may have helped some in this case. Another path which was down about 10 db before installation of the blowers has come up 2 to 5 db on three channels after a period of about a month. A third case, where only one antenna on the path was equipped with a blower, the improvement was 1.3 db in the first month. The trial will continue for several months.

Plans are now being made to provide these blower-heater units as a KS item.

13. SOLAR FLARES DISRUPT OVERSEAS RADIO

Some of the largest solar flares seen in recent years severely disrupted overseas radio-telephone service, operating between 4 and 28 mc, for most of a week beginning July 14. While some service was available intermittently to points in South America, it was generally poor. On the other hand service to European, Asian, and African points was extremely bad with all circuits out a good percentage of the time with only short periods of limited or very poor service available at other times.

Overseas service was again interrupted by poor propagation during the period of August 16-19. All circuits out of New York and White Plains were out of service early Monday morning August 17. Conditions improved during the day and 60% of the circuits were back in service by mid-afternoon. On Tuesday, August 18, conditions were somewhat worse during the day but improved that night and were practically normal on Wednesday morning.

14. MOBILE SERVICE ACTIVITIES

The latest issue of the Mobile Telephone Service map was attached to the July 20 issue of RADIO NOTES. Although all geographical locations were shown, you may have noticed a number of city names missing. The completed map is attached with this issue of RADIO NOTES, and maps showing this service for each of the three frequency bands will be included in the September issue.

15. ORGANIZATION CHANGES

Mr. J. W. Stubner accepted the position of Mobile Radio Engineer effective August 1, 1959. Jim is from the Illinois Company and more recently comes from the Plant Service Section here at 195.

Effective August 15, Mr. H. G. Miller, Special Projects Radio Engineer accepted a position with the Western Electric, Defense Projects Division. Harry will become Superintendent, Transmission Engineering, Eastern Area, Distant Communications and Warning Systems.

On August 31, Mr. D. H. Rymer retires after 39 years of service. For the past 11 years Don has handled the commercial aspects of the radiotelephone business and has contributed substantially to the items published in RADIO NOTES in this regard. Good luck, Don!

16. RADIO INFORMATION

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

BSPM 677A -

BSPM 678 -

BSPM 679 R90.384.31, Issue 1 - Motorola Communications Microwave Radio Equipment MR-10 Type Frequency Diversity System - Modulation Amplifier Test Procedure

R90.384.32, Issue 1 - Motorola Communications Microwave Radio Equipment MR-10 Type Frequency Diversity System - IF Amplifier Test Procedure

BSPM 679A -

BSPM 680 R00.030, Issue 4 - Alphabetical Index to General Letters and BSP's in the Radio Series

R90.335.00, Issue 1 - TJ Radio System - General

R90.950.00, Issue 1 - Motorola VP1N01/VP1N02 Portable Television Relay System - (General)

R90.952.00, Issue 1 - Motorola VP1N01/VP1N02 Portable Television Relay System - (Operating Methods)

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- R90.953.00, Issue 1 - Motorola VP1N01/VP1N02 Portable
Television Relay System -
(Maintenance Routines)
- R90.954.00, Issue 1 - Motorola VP1N01/VP1N02 Portable
Television Relay System -
(Maintenance Methods)
- R90.954.10, Issue 1 - - Transmitter Tests
- R90.954.11, Issue 1 - - Transmitter Voltages
- R90.954.12, Issue 1 - - Transmitter RF Tuning
- R90.954.13, Issue 1 - - Transmitter RF Power and
Frequency
- R90.954.14, Issue 1 - - Transmitter Alarm Adjustment
and Remote Control Operation
- R90.954.20, Issue 1 - - Receiver Tests
- R90.954.21, Issue 1 - - Receiver Voltages
- R90.954.22, Issue 1 - - Receiver RF Tuning
- R90.954.23, Issue 1 - - Receiver Mixer Performance
and Adjustment
- R90.954.24, Issue 1 - - Receiver AFC Check
- R90.954.25, Issue 1 - - Receiver Noise Level
- R90.954.26, Issue 1 - - Receiver Bandpass
- R90.954.27, Issue 1 - - Receiver Signal Level
- R90.954.28, Issue 1 - - Receiver Alarm Adjustment
and Remote Control Operation
- R90.954.40, Issue 1 - - System Tests
- R90.954.41, Issue 1 - - Transmitter Deviation and
Channel Net Gain
- R90.954.42, Issue 1 - - Video Frequency Response
- R90.954.43, Issue 1 - - Square Wave Response
- R90.954.44, Issue 1 - - Differential Phase and Gain
- R90.954.45, Issue 1 - - Noise and Hum

R90.954.60, Issue 1 -	- Unit Tests
R90.954.61, Issue 1 -	- MU-165 Test Oscillator and Balun Amplifier
R90.954.62, Issue 1 -	- MU-231 Video Modulation Amplifier
R90.954.63, Issue 1 -	- MU-204 Control Panel (Transmitter)
R90.954.64, Issue 1 -	- MK-209 RF Box (Transmitter)
R90.954.65, Issue 1 -	- MU-205A Control Panel (Receiver)
R90.954.66, Issue 1 -	- MK-210 RF Box (Receiver)
R90.954.67, Issue 1 -	- IF Performance
R90.954.68, Issue 1 -	- IF Alignment
R90.954.69, Issue 1 -	- AFC Performance
R90.954.70, Issue 1 -	- MU-230 Video Line Preamplifier
R90.954.71, Issue 1 -	- MU-169 Video Line Amplifier
R90.954.72, Issue 1 -	- MU-201 Power Supply
R90.954.73, Issue 1 -	- MU-202 Power Supply
R90.954.74, Issue 1 -	- MU-203 Power Supply
R90.954.80, Issue 1 -	- Miscellaneous Information
R90.954.81, Issue 1 -	- Electron Tube Complements
R90.954.82, Issue 1 -	- Spare Parts List
R90.954.83, Issue 1 -	- Adjusting Transmitter to New Operating Frequency
R90.954.84, Issue 1 -	- Adjusting Receiver to New Operating Frequency
R90.955.00, Issue 1 -	- Motorola VP1N01/VP1N02 Portable Television Relay System (Description and Operating Principles)

- R90.956.00, Issue 1 - Motorola VP1N01/VP1N02 Portable
Television Relay System -
(Installation)
- AA266.071, Issue 2 - TD-2, TH, and TJ Radio - Outdoor
Waveguide Used with Horn-reflector
Antenna - Toll Systems
- BSPM 680A -
- BSPM 681 R90.334.21, Issue 1 - TJ Radio System - Receiver RF to
IF Tests
- R90.335.05, Issue 1 - TJ Radio System - Receiver
- AA266.045, Issue 5 - TD Radio - Automatic Switching -
Auxiliary Station Switching and
Control Equipment - Toll Systems
- P.E.L. 6490 Personal Signaling Service - Supplementary Information on
Licensing Base Station Transmitter and Equipment Power
Requirements for 35 Mc Systems (1S3.9M-5)
- P.E.L. 6495 Mobile Telephone Service - General Electric Company Mobile
Sets for Use With S.E.I. 1315 Selectors and DDS (1S3.9D-70
and 1S3.9N-2)
- P.E.L. 6505 FCC Type Acceptance of Transmitters Required by
January 1, 1960 (1S4.1-209)
- P.E.L. 6507 Renewal of Rural Radio Service Licenses (1S4.1-210)
- P.E.L. 6513 TD-2 Microwave System Noise Considerations in System
Design (1S3.12-30)
- P.E.M. 6996 Mobile Radio Systems - Erco Laboratories, AM - UHF Radio
Equipment Accessories for SAC Bombardment Wing Control
Centers (1S2.11F-2)
- P.E.M. 7008 Mobile Telephone Service - General Electric Company
F.C.C. Narrow Band Compliance (1S3.1-92)
- Unnumbered Letter to All Chief Engineers
- 6-30-59 Checking List Supplement for General Letters Dealing
With Radio Matters (1S3.0-44)
- Unnumbered Letter to All Transmission Engineers
- 8-5-59 TJ Radio - AIEE Papers (1S3.9J-11)

MOBILE TELEPHONE SERVICE
BELL SYSTEM



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