# RADIO NOTES

AMERICAN TELEPHONE AND TELEGRAPH COMPANY

*VOLUME 16, No. 2* *February 28, 1961*



Attached – Bell System Television Network Routes

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## C&P FURNISHES RECORD INSTALLATION FOR INAUGURATION

Millions of television viewers and radio broadcast listeners received programs of the recent Presidential inauguration ceremonies, unaware of the near failure of the audio channel facilities at the Capitol in Washington. Quick action by firemen and the Secret Service extinguished an electric heater fire in the lectern before it knocked out vital C&P cable service.

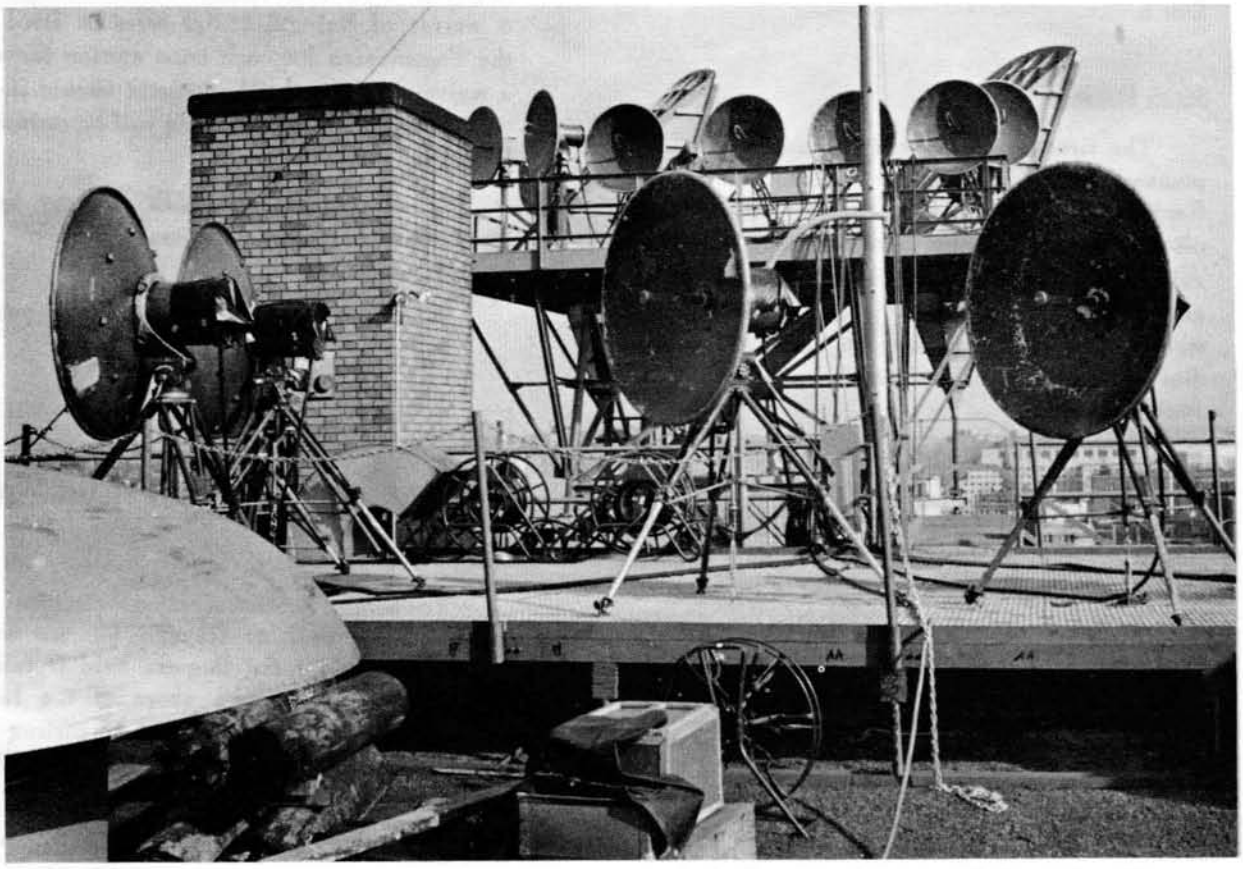
As usual at this quadrennial event, the C&P Company handled the big service problem to their credit. This year the service requirements were greater than ever before. To supplement their own equipment, the C&P borrowed from other Bell Companies the following partial list of items.

54 microwave links
40 clamper amplifiers
17 oscilloscopes
10 video monitors
150 331-A Telephone Sets
50 A2 and A2A Amplifiers

Operation of such a large number of microwave equipments in the Capitol area required preparation of detailed frequency assignment plans, use of cross-polarization techniques and pre-selection filtering in addition to physical separation between equipments using closely adjacent frequencies.

Owing to lack of sufficient frequencies in the 4 and 6 kmc bands, four 12 kmc equipments were employed to pull the show through. These sets proved very useful even though a number of klystron failures were experienced.

The picture shows one of the more congested radio relay points.



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## SOME NEW MOBILE CHANNELS SOON TO GO IN SERVICE

We thought you might be interested in some of the new mobile channels in service or soon to go in service in the following areas. The dial systems mentioned represent moves to meet urgent competition or other specific local situations.

### Maryland

Mobile Telephone Service and Direct Dispatch Service recently established at Hagerstown,

Frederick, Easton and Salisbury, using H2 terminal equipment, will be supplemented by a new channel at Chestertown. The original BTL experimental H1 terminal at Baltimore will be converted to a standard H1 with an auxiliary bay to serve 20 dispatch groups instead of 10. It is planned to extend coverage to Cumberland and Annapolis later this year and Oakland next year to give statewide MTS and DDS coverage.

### Idaho

The dial system now operating in Boise using Lenkurt dial equipment has reached channel fill and an application for a second channel has been filed. An application is being prepared for a third channel for this area. Three additional dial systems at Pocatello, Twin Falls and Idaho Falls have been granted construction permits and should be in operation in the next 2 to 3 months. Flat rate service is offered in all four towns.

### South Dakota

The first mobile system in South Dakota is planned to go in service March 1, 1961, at Rapid City. This will be a two-way dial system offering local flat rate service. Long distance calls and service to roamers will be handled by an operator and billed. Secode terminal and mobile dial equipment will be used. A second dial channel will go into service around June 1, 1961.

### Pennsylvania

Altoona will offer a flat rate dial mobile service starting April 3, 1961 using Secode equipment. This and the Rapid City system will be the first Bell dial installations permitting access by manual roaming units from other service areas. A proposed combined urban radiotelephone and direct dispatch system is planned for June at Williamsport.

### New York

The first dial system in New York State will be placed in service in Plattsburg in May of this year. It will also use Secode dial equipment and will offer service on a flat rate basis for local calls.

All the above systems operate in the 150 mc band and use General Electric radio equipment.

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## POSSIBLE OPERATIONAL LOG WAIVER — DIRECT DISPATCH AND BELLBOY SERVICES AFFECTED

Recent informal discussions with the FCC staff indicate that requests for waiver of the operational log requirement for unattended (automatic) base station operation will be considered on a case by case basis. A waiver would eliminate the requirement for maintaining operator traffic tickets as part of the operational log in those cases where the tickets are not required for any other purpose.

This would include BELLBOY systems which provide service on a flat rate basis or are customer dialed, and include both BELLBOY and Direct Dispatch Systems using pen recorders in lieu of operator tickets for log purposes. An application for modification of license requesting a waiver of Rule 21.208(g) must be filed with the Commission for each base station for which a waiver is desired. The request should include an explanation of how records will be maintained for billing purposes.

The technical log which is kept by the licensed technical operator must, however, still be maintained.

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## COMMUNICATIONS FOR PYRAMID LAKE REGATTA

Temporary communication circuits were provided by Bell of Nevada for the second annual Pyramid Lake Regatta held October 29 and 30 on the western shore of the lake in sparsely settled country about 35 airline miles north of Reno in the Pyramid Lake Indian Reservation.

Facilities were provided by Farinon PT-450 radio equipment with Lenkurt 45 CA and CB carrier on a two-hop basis. The pickup at the tiny settlement of Sutcliff was beamed to 8200-foot Pah Rah Peak 11 miles south and thence to the roof of the Reno toll and tandem building.

This service provided the first opportunity to make use of the equipment which is especially

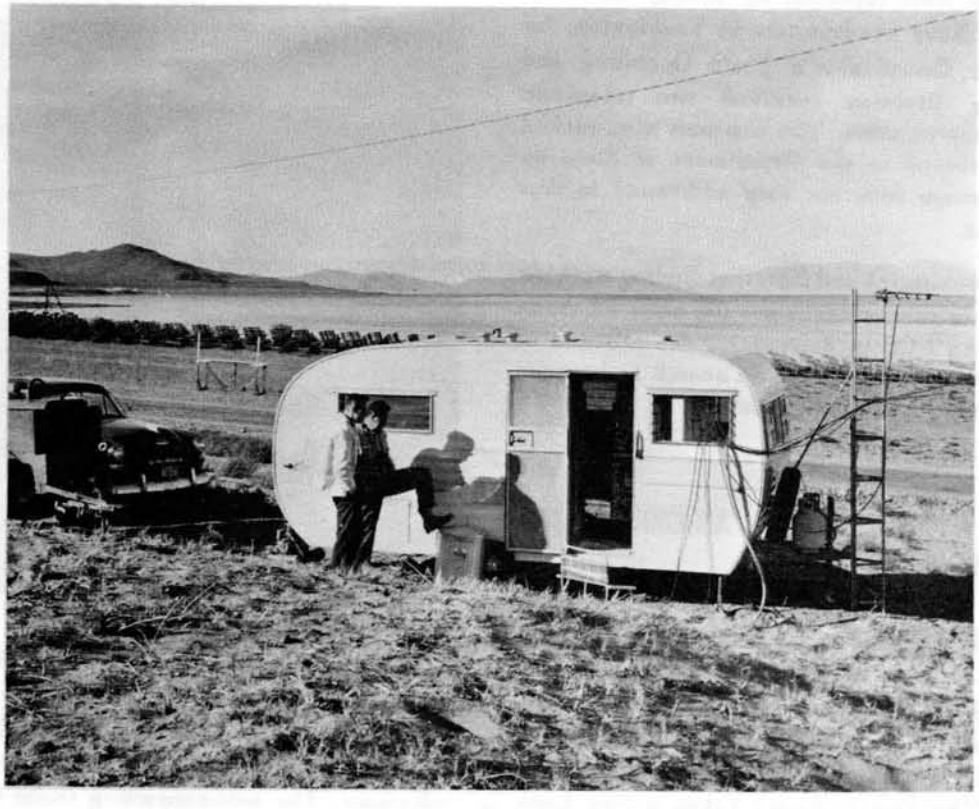
packaged by Farinon for temporary or emergency use. The requirement for portability and ease of handling dictated that it be divided into reasonably small units. The four bays required for an 8-channel terminal were designed and built by Farinon for lightness and strength and equipped with removable front and rear protective covers. Of these four bays, two are carrier, one radio and one miscellaneous for voltage regulators, ringing voltage, talk battery, etc. The equipment is easily handled by two men.

Because portable engine-generators must be used at locations such as Pyramid Lake and the Pah Rah Peak repeater, Stabiline voltage regulators are provided.

Though the carrier channels are designed for use with compandors, none were available. The short line-of-sight radio paths allowed sufficiently high RF signal levels so that carrier terminal noise predominated, the worst channel measuring about 32 dba. Compandors will be used in the future.

Services provided were several Bell of Nevada toll station lines and three private lines to the Mapes Hotel in Reno. Regatta officials were highly pleased with the quality and reliability of the service.

ANTENNAS AT PAH RAH PEAK



SET - UP AT SUTCLIFF

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## HOW THE FCC LOCATED THE "SANTA MARIA"

It was while patroling the radio spectrum around the clock that the Federal Communications Commission monitoring system first heard a message from the hijacked Portugese liner SANTA MARIA. This resulted in the FCC monitoring stations fixing the positions of the vessel which enabled the Navy to follow up with sea, air and radio operations.

The Commission's monitoring station at Ft. Lauderdale, Fla., picked up a radio signal from the SANTA MARIA at 3:55 PM on January 24th. It alerted other stations in the monitoring net, and, as a result, the ship's signals were also heard by the Searsport, Maine, monitoring station. However, propagation conditions were such that the location of the ship could not then be ascertained.

With most of the FCC monitoring stations in the eastern half of the United States participating, the first definite positioning was determined at 2:45 AM the next morning. Within two hours, three different "fixes" were obtained on the moving vessel.

These were reported, as quickly as determined, to Navy headquarters in Washington, for which the Commission's Field Operating and Monitoring Division received two telephone calls of appreciation. The monitors also picked up and relayed to the Department of State an early message from the ship addressed to that department.

The monitoring and direction-finding methods employed in this instance are the same as those used by the FCC in determining the position of disabled ships and aircraft in search and rescue operations on a continuing basis.

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## SPRING 1961 RTCM ASSEMBLY IN SAN FRANCISCO

This year's Spring Assembly of the Radio Technical Commission for Marine Services will be held in San Francisco, California at the Sheraton-Palace Hotel on April 5, 6 and 7, 1961. The Pacific Coast RTCM Advisory Committee is sponsoring this meeting which will carry the theme, "The Pacific Coast Takes a New Look at Maritime Electronics."

As in the past, the first two days of the Assembly will include a business meeting and three sessions of maritime electronics paper presentations. Customarily, the last day will be spent on a field trip in the San Francisco harbor area. Most of the papers and discussion will deal with harbor radar and navigational control matters. This subject is being emphasized because of its timely importance to the San Francisco harbor area. Therefore, less attention will be given this time to those maritime radio matters of direct interest to communications and telephone companies.

The Arrangements Committee, under the general chairmanship of Mr. Ralph B. Dewey, President of the Pacific American Steamship Association, includes Mr. J.W. Dunbar of the Long Lines Department and Mr. C.E. Towle of the Pacific Company.

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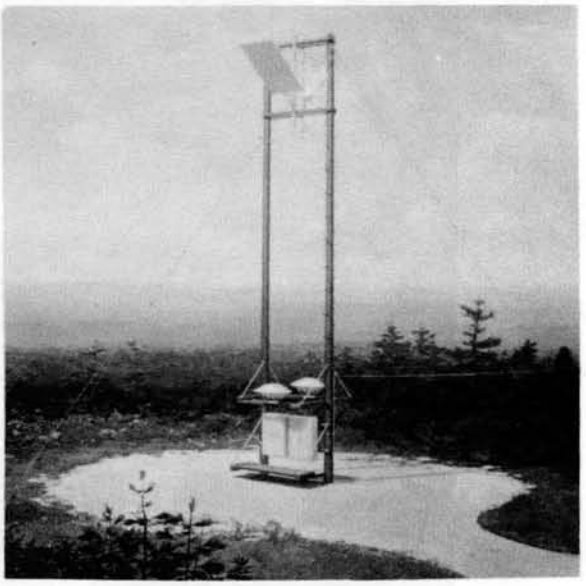
## NEW TOWERS AVAILABLE FOR TL RADIO

Three types of antenna supporting structures have been developed specifically for TL radio systems. Two of these are guyed and self-supporting steel structures which have been designated as type "C" towers. The guyed



**REPEATER STATION UTILIZING H-FRAME TOWER**

tower (AT-8009) will be available in 75, 90 and 105 foot heights and will support two 6 × 8 reflectors. The self-supporting tower (AT-8013) will be available in heights up to 105 feet and

may be obtained in 15-foot increments. Two 6 × 8 reflectors may be supported at the maximum height while two 10-foot dishes can be mounted up to 60 ft.

The third type of antenna supporting structure developed for TL is a guyed wooden H-frame tower (G21.152.1) available in heights up to 60 ft. This is the most economical tower. It will support two 6 x 8 reflectors or two 10-foot dish antennas. The outdoor radio cabinet mounting with its associated working platform is also covered in the "G" Practice.

All of these towers are designed for thirty PSF (87 MPH) wind loading, including 1/2" of radial ice. This strength should be adequate for most areas where TL radio will be used. The Outside Plant people tell us considerable cost savings are possible in the cases where these new tower designs can be installed. The picture shows the designer's conception of a TL frequency diversity repeater station utilizing the economical wooden H-frame tower layout.

The standard type "B" tower is available where heavier loading and higher towers are required. In general, the actual antenna height can be considered 5 ft. lower than the tower height. Although development of type "C" towers was concurrent with TL radio, their use is by no means restricted to this application. A PEL is being written covering the details on these new towers.

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## 150 MC BELLBOY TRIAL IN MANHATTAN

The first half of the six-month 150 mc BELLBOY trial in Manhattan (RADIO NOTES, November 25, 1960) has been completed. The New York Company sales people have started contacting the trial participants to exchange the type of receiver (rechargeable vs. replaceable battery) and briefly interview each customer on his reaction to the type he had been using. Of the 46 customers being provided service, four were removed because of insufficient need for the service. New customers were added to keep the total at 46.

Calls average about 1-1/2 per day per customer. Comments picked up by the sales people continue to indicate good acceptance of the service. It is of interest to note that since the start of the trial, the New York Company has received requests for the service from a considerable number of other customers.

Equipment troubles experienced to date have been few and of minor importance. Some modifications in the central office terminal are now underway to simplify maintenance of the equipment. Improvements in the pocket receiver such as improved stability, louder signal tone, a "break off" type rechargeable battery compartment, and a smaller sized battery charger are under active development by the Laboratories.

Plans now call for production of the terminal gear and 150 mc receivers to start some time during the first half of 1962.

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## "BELLBOY" TRANSMITTER MODIFICATION

There have been two cases reported of breakdown of the filter choke L501 in the high voltage power supply of the Budelman B250-VA4 radio transmitter. This transmitter is used in 35 mc BELLBOY systems. While these breakdowns are considered isolated cases, a change has been made in the circuit to provide a greater margin of reliability.

This change consists of moving the choke out of the positive leg of the power supply and connecting it between the center tap of the power transformer and ground. Locating the choke here reduces the voltage on it by 2000 volts and prevents a breakdown voltage arc from being sustained.

Budelman Electronics Corporation is sending a modification kit, consisting of suitable wire and complete instructions, directly to the Companies using the B250-VA4 transmitters. The kits are being provided without charge and are coded Engineering Change No. 3.

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## PAPER ON 150 MC "BELLBOY" TO BE PRESENTED AT IRE CONVENTION

A paper entitled "A 150 Mc Personal Radio Signaling System," authored by Doren Mitchell and Kenneth Van Wynen of Bell Telephone Laboratories, will be presented March 23 at the 1961 Institute of Radio Engineers Convention in New York. This will be one of five technical papers presented at the session on Vehicular Communications.

The chairman of the Vehicular Session will be Donald S. Dewire, Communications Engineer for the New York State Thruway Authority, formerly Radio Engineer, Upstate, New York Telephone Company. Milt Fruehauf of the "195" Mobile Radio Group is the program organizer.

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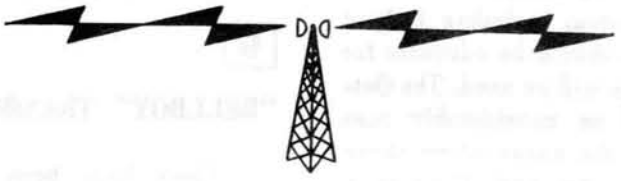
## ORGANIZATION CHANGE

Effective March 1, 1961, Richard O. Young of the Bell Telephone Company of Canada, Montreal, has accepted a position in the Major Account Sales Group, Marketing Department, at "195." He will handle marketing activities pertaining to Public Land Mobile and Maritime Mobile matters. Dick can be reached on EXeter 3-2855.



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## RADIO INFORMATION

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

| | | | |
|---|---|---|---|
| BSPM 751 | E37.454.41, | Issue 2 – | Procedure for Locating and Clearing Transmission Impairments on Television Channels – Low-Frequency Distortion |
| | E47.440, | Issue 1 – | Television – J44107 Television Operating Center (Large and Medium Size) |
| | E47.448, | Issue 1 – | Television – J44107 Television Operating Center (Small, 7 by 12 Maximum) |
| | R90.334.22, | Issue 2 – | TJ Radio System – Receiver Baseband Power Output, Frequency Characteristic, Noise Quieting and Squelch Unit Tests and Adjustments |
| | AB46.444A, | Issue 1 – | Electron Tube Data Sheet – W.E. 444A Electron Tube |
| BSPM 751A | – | | |
| BSPM 752 | E27.430, | Issue 3 – | Type A2A Video Transmission System |
| BSPM 753 | – | | |
| BSPM 753A | – | | |
| BSPM 753B | – | | |
| BSPM 754 | E37.440.11, | Issue 4 – | J44107 Television Operating Center - Preliminary Tests and Adjustments - J44105E Receiving Terminal Amplifier |

E37.440.12, Issue 5 – J44107 Television Operating Center - Preliminary Tests and Adjustments - J44106E Receiving Terminal Amplifier

E37.440.13, Issue 4 – J44107 Television Operating Center - Preliminary Tests and Adjustments - J44107E 1 by 3 Splitting Amplifier

Appendix 1
AA266.015, Issue 3-D – G1 Control Terminal – Radio Telephone - Toll Systems

Appendix 2
AA266.080, Issue 1 – TH Radio – Message Connecting Links - Toll Systems

Appendix 1
AA266.082 Issue 1 – TH Radio – Automatic Protection Switching Equipment – Panels, Mountings and Plug-in Units – Toll Systems

AA636.760 Issue 2 – Performance Requirements – TH Radio Broadband Channel Radio Transmitter – Toll Systems

BSPM 754A –

BSPM 754B –

P.E.L. 6792 TD-2 Radio System – Replacement of Parabolic Antenna Feed Assemblies (1S3.4-142)

P.E.L. 6796 F.C.C. Rules – Amendment of Parts 1 and 21 Establishing a Pre-Grant Protest Procedure (1S4.1-232)

P.E.L. 6803 F.C.C. Rules – Amendment of Parts 5, 9, 10, 11, 16, 19 and 21 to Relax Spurious Emission Limitations (1S4.1-233)

P.E.L. 6804 Television – RCA TVM-1A, 1B, 1Bx Microwave Equipment and Accessory Items (1S3.9F-85)

P.E.M. 7478 Waveguide Components for Microwave Systems – 10A and 12A Transducers (1S3.4-143)

Unnumbered Letter to Chief Engineers

1-26-61 Public Radiotelephone Service to Aircraft – Proposed Nationwide Plan for Ground Stations (1S1.12-8)

Unnumbered Letter to General Commercial Managers

12-28-60 Private Mobile Radio Systems

1-10-61 Final Decision in "Above 890 mc" Hearing (Docket 11866)

# BELL SYSTEM TELEVISION NETWORK ROUTES