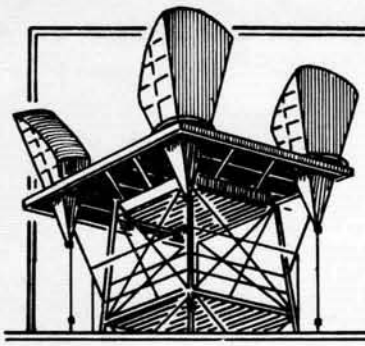


RADIO NOTES

AMERICAN TELEPHONE AND TELEGRAPH COMPANY

VOLUME 15, No. 7 *July 28, 1960*

Attached – Map of Public Class IIB Coast Stations

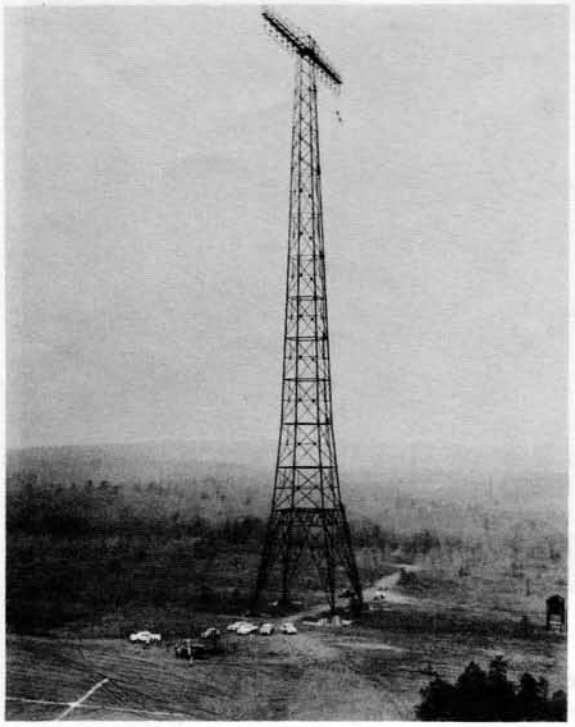
– Map of Public Class IIIB Coast Stations

Printed in U.S.A.

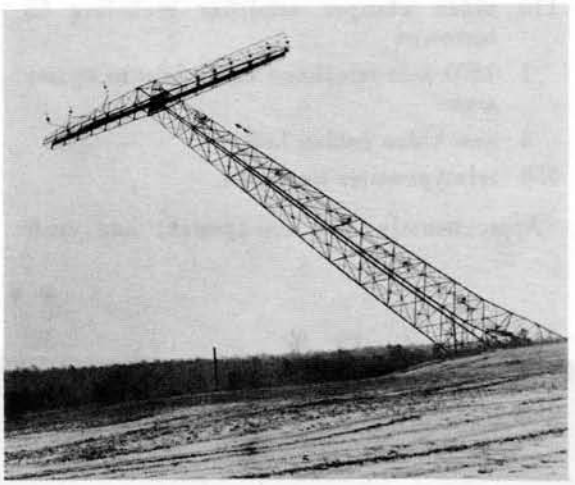
1

LONG-WAVE RADIOTELEPHONE TRANSMITTING TOWERS DISMANTLED

Five of the six 400-foot steel towers at Rocky Point, Long Island, which supported the transmitting antenna for the original long-wave transatlantic radio circuit were taken down recently. The six 40 story towers with 150-foot crossarms were erected in 1920 and 1921. They have been a Long Island landmark and frequently used by mariners on Long Island Sound for determining navigational fixes. The remaining tower, with its crossarm removed, now supports aircraft warning beacons and microwave antennas.



The original A.T.& T. Company long-wave circuit, which was a single-sideband system, went into commercial New York-London service in January 1927. It was augmented the following year by short-wave facilities, which proved to be generally more satisfactory as well as less expensive. These were double-sideband at first, but were modified during the 1930's for single-sideband operation. Practically the entire overseas radio plant is now equipped for single-sideband operation. The original long-wave circuit was maintained as an emergency facility, but after the transatlantic cables were placed in service the long-wave system was finally retired. Subsequently, the lease from RCA of the Rocky



Point antennas and building space was terminated and all A.T.& T. Company equipment removed from the premises. Pictures of the demolition operation were furnished through the courtesy of THE NEW YORK TIMES.

2

1960 DEMOCRATIC CONVENTION STATISTICS

Some interesting statistics have been received from the Pacific Company concerning their extensive coverage of the Democratic National Convention in Los Angeles this month. The following special services were provided:

95	4 megacycle video circuits
150	5 kc audio circuits to sports arena
61	5 kc audio circuits to hotels, etc.
50	telephoto circuits
250	telegraph circuits

The provision of these services utilized considerable quantities of plant estimated to be worth over $1,000,000. The following summarizes the plant used:

54	microwave radio systems, including 24 borrowed (46 point-to-point and 8 mobile pickup)
5	audio diplexers for use over microwave radio
1	80-foot microwave radio tower placed at KABC
1	40 kw emergency engine alternator for standby power
176	video bandwidth pairs

115 video clamper amplifier including 65 borrowed

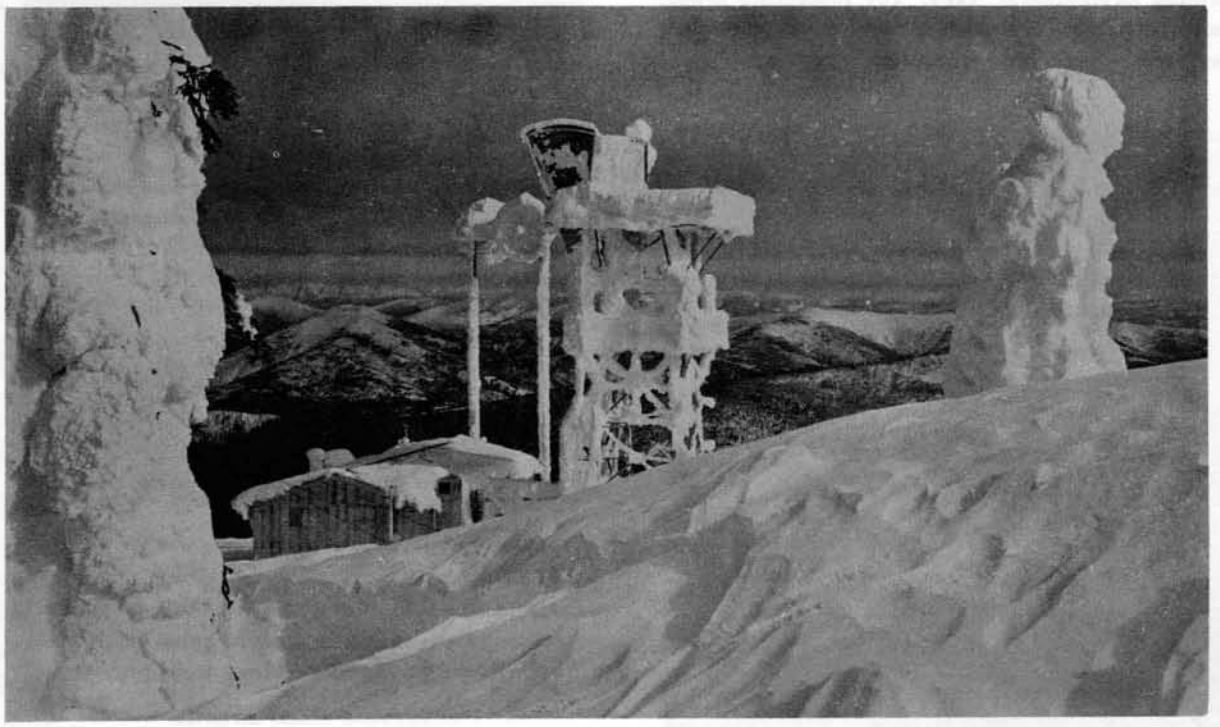
1 1800 pair telephone cable laid to sports arena

5 new video cables laid

350 teletypewriter machines.

Approximately 184 management and craft people of which 34 were borrowed from other areas and companies were assigned to cover the convention on a 24 hour basis between June 27 and July 15. An impressive microwave radio engineering job was done by the Los Angeles people particularly in avoiding interference at one location where 39 equipments were operating side by side.

* * * * *



3

WINTER IN BRITISH COLUMBIA

The snow-capped microwave station is one of 13 TD-2 stations in the British Columbia section of the Trans-Canada microwave network. This picture is particularly interesting in that it shows adjacent dish and horn reflector type antennas under severe icing conditions. This photograph of the Creston repeater station was furnished through the courtesy of the British Columbia Telephone Company and Bell of Canada. The snowman-like objects to the right and extreme left are ice and snow covered trees.

The parabolic antennas are 10-foot diameter antennas operating at 900 mc. These antennas have structural reinforcement to withstand the elements in this section. The horn reflector antennas are normally free of ice and snow; however, in the most severe weather conditions they too are covered. No mechanical difficulties have been encountered with the horn reflector. There have been no transmission difficulties on either the 900 mc or 4000 mc system because of icing on this route.

All stations on this route in British Columbia require at least Sno-cats for access in the winter. One station at Salmo is manned continuously during the winter months because access by land is not practicable. Here, two men "live" at the mountain top station and are relieved by a fresh crew brought in by helicopter every two weeks. One of the longest tramways in the world provides winter access to a station at Hope. Hoarfrost, rime ice and snow are the principal sources of winter cover at these locations.

4

RUSTY BOLTS

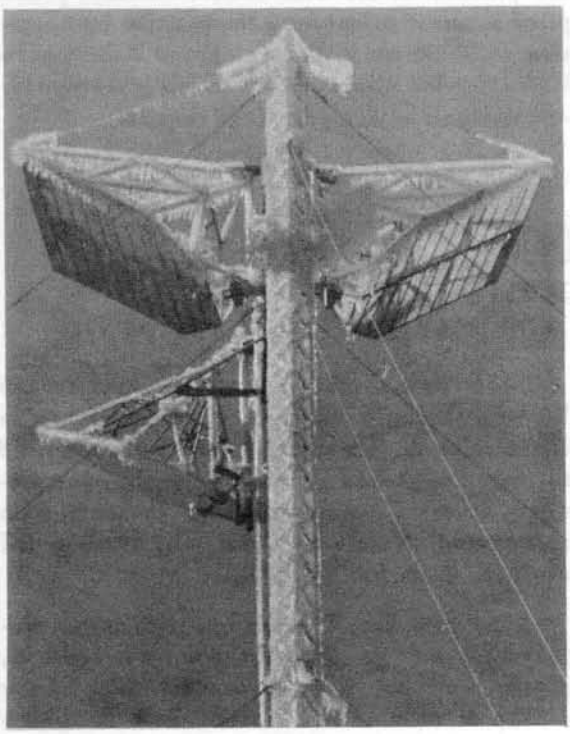
The bolts and nuts specified for joining sections of outdoor waveguide are made of corrosion resisting steel. Several complaints have been made indicating that rust was accumulating on this hardware. In practically all cases the rust was found to be a surface condition that does not impair the strength of the bolts. In some cases the condition may have been caused by deposits from water carrying iron and other impurities from parts of the antenna structure.

Before replacing bolts or nuts that appear to be rusting it is suggested that the surface be cleaned by scraping or sanding. If deep pits or rust spots remain the parts should be replaced by the approved type of hardware. A small amount of surface corrosion is normal and replacement should not be necessary if corrosion resisting material is used.

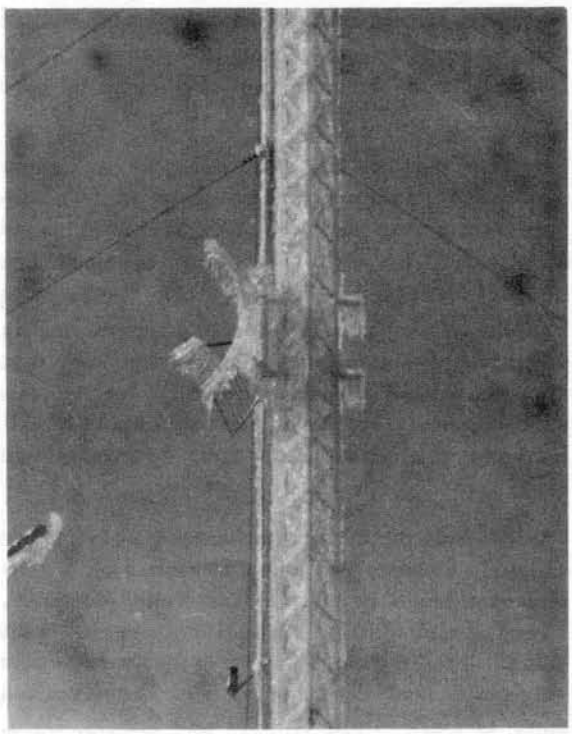
5

FALLING ICE IN MICHIGAN

These pictures were taken of an unusual icing condition that occurred during the week of May 8 at a Michigan Bell station in the Upper Peninsula. Both the reflector and tower structures withstood the ice load; however, falling ice damaged the dish antennas directly below causing a twenty-five hour service interruption.



The tower is a 200-foot H-frame guyed type supporting two 8 x 12-foot Motorola reflectors and one 8 x 12-foot, KS-16320 reflector. Two 6-foot Gabriel dishes and one KS-16386, 5-foot TJ dish are roof top mounted on a steel panel building between the tower legs. Falling ice damaged all three dish antennas, and the possibility of additional falling ice prevented immediate access to restore the service. The roof structure was damaged to the extent that power to the station was cut off to prevent secondary water damage. Near normal received signal levels were restored by bending the Gabriel antennas back into their approximate shape. A new TJ dish was available and was used as a replacement for the damaged TJ dish.



About half of the antenna systems on short haul routes in the Bell System utilize reflectors. A recent survey shows that prior to this Michigan case the system has experienced over 1300 reflector years of service since 1951 with six cases where falling ice damaged the dishes below. Three of these cases resulted in a few hours of service outage. This experience has been good; however, the possibility of falling ice should not be overlooked.

6

TRIAL OF SINGLE-SIDEBAND MARITIME SERVICE IN GREAT LAKES AREA

Recent action by the F.C.C. has opened the way for a trial of single-sideband (SSB) operation in maritime mobile services in the Great Lakes area. Special temporary authorizations for developmental coast stations were granted to Illinois Bell and Lorain County Radio Corporation, both of whom already provide regular ship-to-shore telephone service. At the same time, developmental ship station authorizations were granted the Chicago-Duluth-Georgian Bay Transit Company and the Mechling Barge Line. All authorizations are good until September 25, 1960.

Arrangements for this trial were initiated in the interest of providing better communications to vessels on the Great Lakes. The Georgian Bay Company and the Mechling Barge Line, as regular maritime service subscribers, worked with the Illinois Company in the planning. Lorain Radio accepted an invitation to take part.

The purpose of this radio is to obtain operational experience and data on ship-to-shore telephone service using single-sideband facilities. This also will permit a comparison of single-sideband performance with the existing Coastal Harbor double-sideband operation. In particular, the subscriber participants hope that single-sideband communications may prove superior, and that this type of emission will increase the privacy of their radiotelephone calls.

All SSB radio units to be used at the shore and ship stations are being furnished on a consignment basis by the Collins Radio Company. These Model 32RS-1 transceivers are 100 watt P.E.P. (peak-envelope-power) suppressed-carrier single-sideband equipments. The coast station units at Lake Bluff, Illinois and Lorain, Ohio, are to be arranged for connection to the telephone network. Regular telephone service will be provided to the equipped vessels under existing tariff rates. Coast and ship stations will be equipped to operate simplex on 4372.4 and 8797.3 kc.

On July 9, the Georgian Bay passenger ship, "North American," sailed from Chicago. During this departure, the first single-sideband radio test call was made from this vessel to Illinois Bell's developmental coast station. Subsequent test calls have been successfully conducted between these same two stations as the North American navigated from Lake Michigan into Lake Huron. As their installations of SSB equipment are completed, the other participating stations will join the trial.

7

POCKET-CARRIED RADIO EQUIPMENT FOR TELEPHONE MAINTENANCE SERVICE

The committee on portable radio equipment for plant work operations recently made preliminary comparison tests at the Chester Field Laboratory. Citizens Band type 27 mc AM and Motorola FM low and high band pocket-carried radio sets were used in this one day field trial.

Tests were made under simulated field conditions over rolling terrain. In the absence of noise, the 0.1 watt 27 mc AM set provided good communication up to about one-half mile. This was somewhat superior to that provided by the higher powered FM Motorola pocket-carried unit. Ignition noise was found to seriously affect the AM signal; however, small size, light weight and simplicity of operation favored the unit. Tests on similar AM equipment from another manufacturer are planned in the near future. Suitability and price information covering these units for operation on 35.16 mc in the Telephone Maintenance Radio Service allocation are being investigated, and we shall advise you of the results.

8

38-TYPE RADIO RECEIVERS FOR 1-WAY SIGNALING

The New York Company is holding 146 Western Electric 38-type radio receivers in Class C stock. These units can be readily used to meet new 1-way vehicular signaling requirements on urban mobile telephone channels. (See unnumbered letter to Chief Engineers dated April 26, 1960, file 1S3.2-60.)

The New York Company is anxious to dispose of these sets. If you have any use for them, please call Mr. K.W. Kramer on 212 EXeter 4-2484 or write to him at New York Telephone

Company, Room 620, 140 West Street, New York 7, New York.

Once this type of receiver is gone, modifications of complete 2-way sets will have to be made for 1-way signaling service. At the same time, interest in Bell Boy service could generate increased demand for vehicular signaling; so it might be prudent to have a limited quantity of 38-type receiving equipment on hand.

9

LIGHTNING DAMAGE

Recently, a direct lightning hit was received at a New York Company base station serving the New York State Electric and Gas Corporation on Coe Hill, Oneonta, New York.

This station consists of a 60 watt Motorola floor mounted base station, a 120 foot steel self-supporting tower, a standard coaxial antenna, and a 1KW automatic start emergency generator. The equipment is housed in an 8' x 8' wooden building. A 4400 Volt primary feeds power to the site, and a telephone and control line work over several miles of open wire. Protection and grounding were standard. The base of the tower was connected to buried radials with #6 wire. The coaxial cable, armored RG8U, was bonded to the tower about every 10 feet. Inside the building the power company and telephone grounds, the emergency engine, the transmitter and tower radials were all clamped together with #6 wire.

Damage was quite extensive. The coaxial antenna was broken in half with the base of the whip fused into a lump of copper. The insulator had completely disintegrated. Every bond clamping the coax to the tower was burned off.

Inside the hut, the coaxial braid had melted completely off the flexible RG8U and had been showered throughout the back of the transmitter RF unit. The heat of the blast had caused a blue haze to cover everything inside the building. The chromium strips on the radio cabinet were blown off and melted. The door of the building, together with the door casing was torn completely off and deposited in a field about 50 feet away. The power service entrance and telephone instruments were completely destroyed as were all the power outlets and wiring within the building, including a selenium rectifier in the transmitter power supply. Strangely enough, the emergency engine and generator were still in working order.

The station was put back in service the following day by installing a temporary antenna on a 20 foot telephone pole, installing a new selenium rectifier and borrowing a 30 watt mobile transmitter for radio equipment. After the shielded braid was cleaned out of the 60 watt transmitter, it was put back in service, apparently having suffered no other ill effects. The base station receiver escaped completely. The primary transformer located about 100 yards from the building was burned out and had to be replaced.

The intensity of the lightning bolt striking this station was considered unusually high. Had the station not been grounded as well as it was, even greater damage would have been incurred.

10

ORGANIZATION CHANGES

Howard R. Stevens joined the Point-to-Point Radio Group July 1, 1960. He will be primarily concerned with the engineering aspects of TD-2 radio systems and can be reached on EXeter 3-4344. Howard comes from the Defense Projects Division of the Western Electric where he has been an Assistant Superintendent in engineering and coordination work of the ADES project.

Bill Keller in the Special Projects Radio Group has taken over primary responsibility for TJ radio systems from Bob Kiesling. The TJ system is not new to Bill as he has handled certain aspects of this system since its introduction to the field. This change will permit Bob to devote the majority of his time to the new TL radio system.

Those members of the Radio Section who now occupy temporary quarters on the 12th floor here at 195 are expected to return to their permanent location on the 17th floor during the week of August 1. They will continue to occupy the southwest corner of the building as before; however, you will find the individual group location layout quite different. Telephone extensions will remain the same.

RADIO INFORMATION

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

BSPM 722	R60.035, E47.419,	Issue 3 – Television, KS-5799 Video Monitor
BSPM 722A	–	
BSPM 723	R60.450.00,	Issue 1 – J68349B Regular Channel Initiator and J68349C Protection Channel Initiator (TD-2 Radio System) (General)
	R60.452.00,	Issue 1 – J68349B Regular Channel Initiator and J68349C Protection Channel Initiator (TD-2 Radio System) (Operating Methods)
	R60.453.00,	Issue 1 – J68349B Regular Channel Initiator and J68349C Protection Channel Initiator (TD-2 Radio System) (Maintenance Routines)
	R60.454.00,	Issue 1 – J68349B Regular Channel Initiator and J68349C Protection Channel Initiator (TD-2 Radio System) (Maintenance Methods)
	R60.454.01,	Issue 1 – Filament Activity Test
	R60.454.02,	Issue 1 – Input Impedance Measurement
	R60.454.03,	Issue 1 – IF Transmission Test
	R60.454.04,	Issue 1 – Linearity Test
	R60.454.05,	Issue 1 – Coarse Linearity Adjustment
	R60.454.06,	Issue 1 – Monitoring Video Amplifier Adjustment
	R60.454.07,	Issue 1 – Local Oscillator Tuning Check
	R60.454.10,	Issue 1 – Adjustment of Reinserted Pilot
	R60.454.11,	Issue 1 – Modulator and Pilot IF Amplifier Tuning and Detector Tests
	R60.454.12,	Issue 1 – Pilot Switch Adjustment
	R60.454.13,	Issue 1 – Slicer Circuit Tests
	R60.454.14,	Issue 1 – Noise Detector and Fade Switch Adjustment
	R60.454.20,	Issue 1 – Trouble Location Tests
	R60.454.21,	Issue 1 – Voltage Measurements
	R60.455.00,	Issue 1 – J68349B Regular Channel Initiator and J68349C Protection Channel Initiator (TD-2 Radio System) (Description and Operating Principles)

CANCELLED SECTIONS

	R60.450, Issue 1 –	J68349B Regular Channel Initiator and J68349C Protection Channel Initiator (General)
	R60.452, Issue 1 –	J68349B Regular Channel Initiator and J68349C Protection Channel Initiator (Operating Methods)
	R60.453, Issue 1 –	J68349B Regular Channel Initiator and J68349C Protection Channel Initiator (Maintenance Routines)
	R60.454, Issue 1 –	J68349B Regular Channel Initiator and J68349C Protection Channel Initiator (Maintenance Methods)
	R60.455, Issue 1 –	J68349B Regular Channel Initiator and J68349C Protection Channel Initiator (Description and Operating Principles)
BSPM 723A	–	
BSPM 724	R90.314.18, Issue 2 –	J68331 Transmitter-Receiver Bay (TD-2 Radio System – Common Considerations, Tests, and Procedures – Microwave Generator)
BSPM 724A	–	
BPSM 725	R90.334.31, Issue 1 –	TJ Radio System – Diversity Switch and Transmission Unit
	AA266.080, Issue 1 –	TH Radio – Message Connecting Links – Toll Systems
BSPM 725A	–	
BSPM 726	–	
BSPM 726A	–	
P.E.L. 6637	Television – Component Changes to Increase the Reliability of Video Amplifiers and Clampers	
P.E.L. 6642	Television – 9A Distortion Meter	
P.E.M. 7246	Modification of N Carrier Circuits Used for TD-2 Automatic Switching Control Arrangements (1S3.6-80)	
P.E.M. 7245	Television – 70-Type Power Meter – Increase in DIAL 2 Adjustment Range	
P.E.M. 7265	Mobile Telephone Service – Provision of Mc-BTR3 Transmit-Receive Set for Narrow Band Use (1S3.9D-73)	

Unnumbered Letter to Defense and Military Coordinators

5-27-60	Ionizing and Microwave Radiation

Unnumbered Letter to Marketing Department List

6-16-60	Public Air-Ground Radiotelephone Service

Unnumbered Letter to Certain Transmission Engineers

6-24-60	BELLBOY Personal Signaling Service – System Line-Up Information for 35 mc Service (1S3.9M-16)
6-30-60	BELLBOY Personal Signaling Service – Troubles with Interrupter in Stromberg-Carlson Tone Generator (1S3.9M-17)

Unnumbered Letter to Plant Supervisors

6-24-60	Mobile Radio Cost Results Summary

CORRECTION LETTER

6-9-60	Mobile Radio Cost Results Plan