

RS&C

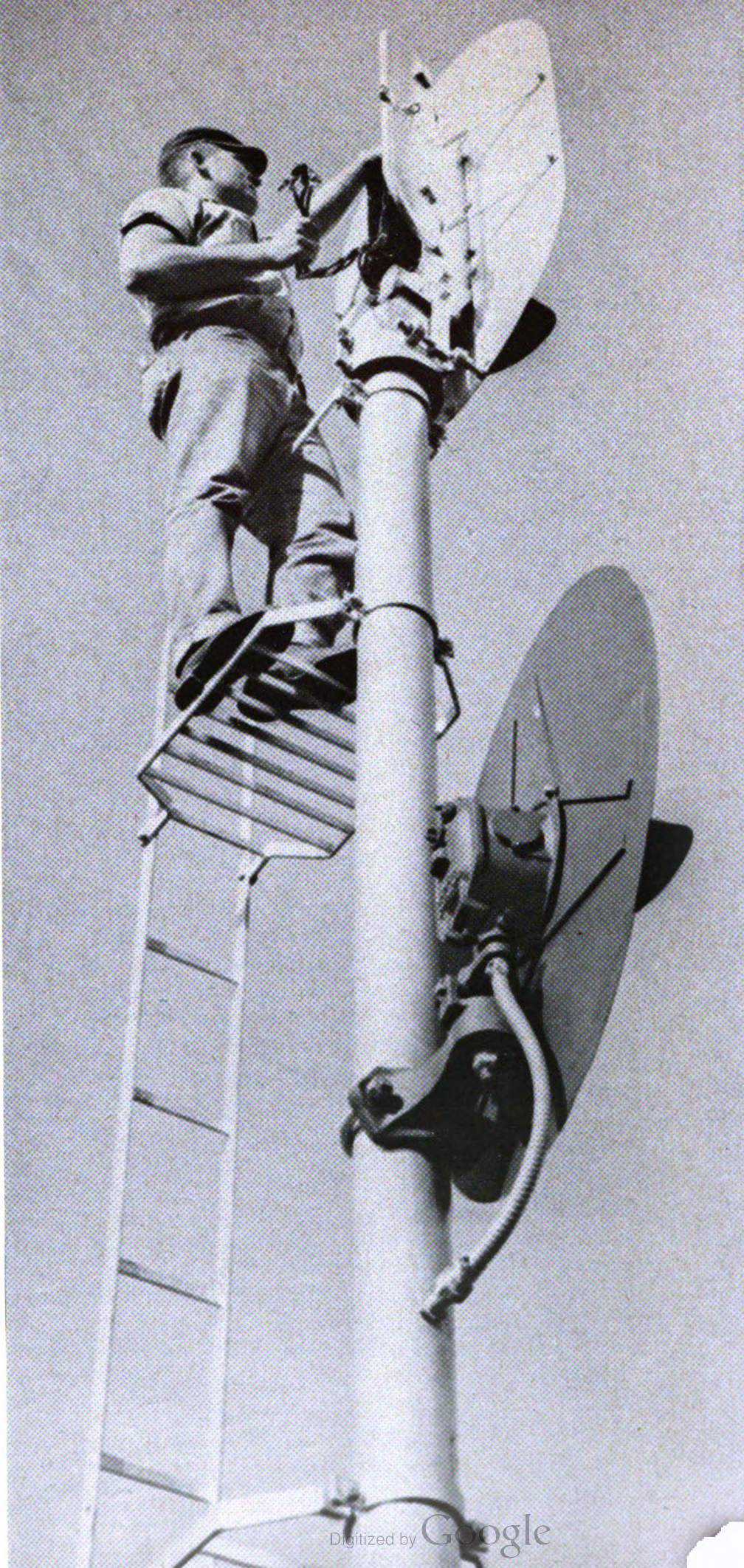
1962 OUTLOOK

RSC's signal construction outlook for 1962 begins on this page, and the communications outlook for 1962 begins on page 17. A review of C&S activity in 1961 is on page 12. Tables of last year's signal installations begin on page 13. Communications tables begin on page 16.

Railroads have budgeted \$57,917,400 in capital expenditures for signaling facilities during 1962. This is an increase of about 20% over last year, according to a recent *Railway Signaling and Communications* survey. Twenty-three railroads planning to increase capital expenditures for signaling in 1962 reported budgets totaling \$4,201,600. A total of \$10,342,100 is budgeted by 13 roads who say their total spending plans for signaling are the same as last year. And 23 railroads say that they will spend less for signaling in 1962 than in 1961; their budgets total \$3,373,400.

Centralized traffic control leads all other projects in the 1962 spending plans of U.S. and Canadian railroads, reported to RS&C. Eighteen roads have CTC plans approved for this year, 11 of which expect to install a total of 1,829 road-miles. This is 85 road-miles more than was installed by railroads in 1961. The reporting roads also indicated that 359 miles of track would be taken up as a result of these CTC installations. Several railroads are replacing double-track automatic block signaling with single-track CTC.

Other areas of significant signal construction activity include interlock-



ings, highway crossing protection and automatic retarder classification yards. In the latter category, no automatic yards were completed in 1961; only three were started. Five roads reported that each will start construction of an automatic yard during 1962. Nineteen railroads reported plans to install flashing-light signals and/or flashing-light signals with automatic gates at 685 highway-railroad grade crossings. Another 12 roads state that their highway crossing protection programs in 1962 will be equal to or greater than the 1961 programs. Interlocking construction centers around consolidations

of existing plants and replacement of attended plants with automatic interlockings. The survey shows 11 railroads installing 90 interlockings, of which 32 are automatic plants. Six other roads reported activity in this field, but gave no specific figures.

Hotbox detector installations will also hold strong during the coming year, although survey results show only 28 detectors are presently in signal department budgets. One industry source estimates that total installations will probably be in the neighborhood of 150 hotbox detectors. Manufacturers report that orders for these safety de-

vices already show an increase over a year ago.

Automatic train operation (ATO), a popular topic among railroad men, Wall Street security analysts, labor leaders and politicians, should make headlines in 1962 when two installations are expected to be placed in service. One, hailed as the world's first all-automatic railway, is the Carol Lake ATO installation on the six-mile Carol Lake Railway between the Smallwood, Labrador, iron ore mine and Iron Ore Co. of Canada's concentration plant at Wabush Lake. Hardware is now being readied, with testing scheduled for this spring and operation soon thereafter. Claude K. Howse, Newfoundland representative of the Iron Ore Co. of Canada, has said: "We will be moving 50,000 tons [of iron ore] a day, which will be hauled six miles by rail to our \$70-million concentrating plant. Ninety-six trains a day will run over a single track, and not a person on them—the world's first automatic railway." He said his company's part of the project would come into production in July 1962.

The other ATO installation, probably the most talked about, is the New York City Transit Authority's crewless subway train that is in test service on the Grand Central Terminal-Times Square shuttle. Testing was completed and the automatic train was ready to run December 15, 1961, when a threatened strike by the Transport Workers Union (representing motormen and conductors) prompted Arbitrator Theodore W. Kheel to order the in-service operation to be postponed until after the new contract between the TWU and NYCTA became effective this year.

Although the crewless subway train was the subject of much heated debate between TWU President Michael J. Quill ("Gadget or no gadget, the motormen and conductors will stay on the trains") and NYCTA Chairman Charles L. Patterson ("There is nothing revolutionary. . . . It is simply a step forward"), it will run for a six-month experimental period with a TWU motorman on board. After this period, TWU and NYCTA will talk about the man power problem on this and other (future) ATO installations on the subway. NYCTA has indicated the desirability of automating the other two GCT-TS shuttle runs as well as three others, and possibly trains running to the 1964 World's Fair on Long Island.

Other ATO installations are on the drawing boards, and some are far enough along so that the electronic equipment is being developed. Field testing of ATO should continue this

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C&S Activity Down in 1961

Although indications were that communications and signal activity in 1961 would be at the previous year's level, the railroads declining income sent C&S construction to its lowest levels since 1957-58. Communications facilities installed during 1961 totaled 8,548 units, a drop of 46% from 1960. Signal construction fell 31% from the previous year to 6,370 units installed in 1961. The last equivalent years for this level of C&S construction were 1957 for communications (8,445 units) and 1958 for signaling (5,929 units). Since then, C&S activity had risen until the 1961 fall off.

In spite of the gloomy year, significant technological developments and activity trends added a cheery note to the overall performance. As anticipated by many, microwave continued to hold the communications spotlight. D&RGW placed its 700-mile microwave and facsimile system into full operation. CN, AT&SF, SOU and UP placed important microwave links in service and let sizeable contracts for additional microwave systems. On the FCC front, the railroads and AT&T agreed over interconnection. A Commission decision is expected within a month or two. An investigation is now underway by the FCC into AT&T's Telpak tariff (the telephone company's bid to compete with private microwave systems by providing bulk communications channels).

On the signal side, automatic train operation tests were continued by the NYCTA on its crewless Times Square-Grand Central Terminal shuttle train. It went into experimental passenger operation Jan. 4. A coke-quenching railway operation placed in service during 1961 utilized an automatically controlled crewless locomotive and the SAL installed "talking" hotbox detectors which radio hot journal locations to train crews and dispatchers.

Signal Facilities Installed in 1961

Summary of Signal Equipment Installed, 1959-1961

	1959	1960	1961
Traffic control and block signal systems			
Track miles*	2,370.8	3,319.7	2,116.2
Controlled signals	1,485	2,116	1,167
Automatic signals	1,349	1,547	1,134
Power switches	536	849	452
Spring switches	94	77	55
Electric locks	426	828	523
Automatic train stops (ATS)	155	196	234
Rolling stock with ATS	174	—	—
Cab signals	2	13	3
Classification yards			
Retarders	48	57	15
Power switches	164	463	59
Highway crossings protected			
Flashers only	1,012	1,095	1,128
Gates and flashers	387	382	425
Interlockings			
Power switches	264	323	275
Home signals	440	527	510
Distant signals	142	147	94
Safety devices			
Broken flange detectors	10	15	15
Dragging equipment detectors	23	17	37
Hotbox detectors	121	141	115
Slide fence, feet*	39,125	39,966	16,461
Other	—	74	19
Spring switches (not in TCS)	47	125	53
Facing point locks	17	63	17
Signals at spring switches	61	182	40
Totals	6,957	9,237	6,370
* Excluded from totals.			

Yard Signaling Installed During 1961 on U. S. & Canadian Railroads

BGM	Mechanicville, N. Y.	1 master retarder
CNR	Montreal, Que.	6 non-interlocked switches, 1 cab signal
CGO	Russell, Ky.	1 interlocked switch
CMS&P&P		1 yard control system for 21 switches
MP	No. Little Rock, Ark.	13 retarders, 41 class tracks,
		40 non-interlocked switches, 2 cab signals
NGW	Roanoke, Va.	1 retarder, 9 class tracks, 6 interlocked and 6 non-interlocked switches

1961 Hotbox Detectors Installed

AT&SF	2	GMGO	1
ACL	5	LGN	9
BGO	2	NYC	23
BGM	2	NGW	5
CNR	2	SAL	28
CGO	5	SOU	10
CGEI	3	SP	7
CMS&P&P	5	T&P	2
FEC	3	Total	115
DGH	1		

Miscellaneous Detectors Installed

AT&SF	2 flood detectors
FEC	4 track circuit controlled traffic signals
NYCTA	15 smoke detectors
StL-SF	1 OS'ing device
SP	1 high load detector
	1 mudslide detector
SPS	12 motor car indicators

Railroad-Highway Grade Crossing Protection Installations in 1961

Railroad	Flashers	Gates
ALASKA	2	1
AT&SF	88	31
AGSAB	6	—
AGWP	—	1
ACL	30	12
BGO	25	13
BAR	1	—
BGM	8	8
CNR	175	37
CPR	124	16
CofGa	6	1
CNJ	6	2
CV	—	2
CGO	18	9
CGEI	1	1
CGIM	1	—
CGNW	48	9
CB&Q	15	10
CGW	4	1
CMS&P&P	26	4
CNSGM	—	2
CRIGP	29	12
CSS&SB	1	3
CTA	—	1
D&H	2	2
D&RGW	12	—
DT&I	—	4
DM&IR	3	—
E-L	2	5
FEC	5	4
GA	—	1
GGF	4	4
GN	20*	9
GB&W	1	—
GM&O	12	1
IC	15	34
IT	1	—
KCS	12	—
KCT	1	—
LI	2	6
LGN	11	4
MeC	7	9
MKT	8	2
MP	23	10
MONON	4	—
NYC	53	32
NYC&StL	15	10
NYNH&H	7	—
NGW	4	5
NP	13	2
ONL	1	—
PGE	4	—
PRR	33	29
PRS	7	—
P&N	2	—
PGLE	—	2
PG&WV	1	—
QC	2	—
RDG	—	6
StL-SF	18	1
StL-SW	7	—
SAL	18	11
SOO	1	15
SOU	23	2
SP	105	18
TRRS&L	—	6
T&P	11	—
TP&W	2	—
TH&B	1	1
UP	27	5
WAB	9	7
WM	—	2
WP	5	—
Total	1,128	425
100% RR Funds	192	122
100% non-RR Funds	133	40
Joint RR & non-RR Funds	803	263

* Includes 15 rotating stop signals.

Centralized Traffic Control Installed in 1961

Railroad	Location	Road Miles	Switches	Locks	Signals
AT&SF	Maine-Williams Jct., Ariz. (ABS)	12.2		12 ats	
	Ethel-WB Jct., Mo.	58	21	35	33 c 72 a
	Lubbock, Tex.-Texico, N. M.	88	15	44	49 c 24 a
	Clovis, N. M., Yard	3.2	21		23 c
	Maine-Williams Jct. and Crookton-Seligman, Ariz.	19.9	10	4	14 c 24a
ACL	Belt Jct.-Birds, Tex.	3.6	1 ss	3	3 c
	Contentnea-Micro, N. C.	19	4	5	12 c 12 a
	Smithfield-S. Beard, N. C.	39.9	10	26	28 c 30 a
BGO	Bayview, Md.-Philadelphia, Pa.	86.5	17	36	42 c 52 a
	Orleans-Okonoko, W. Va. Patterson Creek, W. Va.-McKenzie, Md.	13.2		2	8 a
B&M	New River-SD Cabin, O.	26.9	7	14	2 c 4 a
	Seven segments in Mass.	15.5	4	5	14 c 5 a
CNR	Car repair shop London, Ont.			12	
	Alexandria, Ont.			1	
CPR	Turcot-Dorval, Que.	7	52	8	30 c 14 a
	Montreal-Eastern Jct., Que.	4	4	17	12 c
	Portage la Prairie, Man.-Melville, Sask.	224	28 + 25 ss	19	109 c 53 a
	Pacific Jct.-Napadogan, N. B.	107	14 + 9 ss	4	49 c 22 a
CofGa	Bordeaux-Lovalde Rapid, Que.	0.3	gauntlet		4 c
	Indian Head-Moose Jaw, Sask.	83.1	20		56 c 43 a
C&O	Sterrett-Trammells, Ala.	29.6	1 ssl	3	28 c
	Covington-BS Cabin, Va.	4.3	12	17	16 c 8 a
CGE	Cabin Creek Jct.-St. Albans, W. Va.	25.5	41	25	80 c 19 a
	Pence-Springdale, Ky.	9.2	2	2	6 c 6 a
	Fowlerville-Trowbridge, Mich.	22.6	4	5	13 c 13 a
CGNW	Erie, Mich.-Alexis, O.	4.9	2	1	5 c 3 a
	Merrillan-Altoona, Wis. (ABS)	39			18 a
CGWI	Chicago, Ill.	3.3			2 c 10 a
	Centralia, Ill.	0.1	3	1	7 c
CRIGP	Beacon-Eddyville, Ia. (ABS)	10			10 a
	Laramie-Desplaines Ave. (ABS)	3.3		10	42 a
CTA	Wilson-Lawrence Ave. (ABS)	0.5			8 a
	Elkhorn, Ky.-Spartanburg, S. C.			1	
Cinchfield		0.7		1	2 c
	Colliers-Afton, N. Y.	38	7 + 1 ssl	26	26 c 29 a
D&H	Salida-Kobe, Colo.	46.6	6 + 3 ssl	5	36 c 21 a
	Lynn-Soldier Summit, Utah	18.3	10	5	28 c 28 a
DM&IR	Mt. Iron, Minn.	1		2	1 c 1 a
	Aylmer-Surrey, N. D.	50	8	9	32 c
GN	Pacific Jct.-Chester, Mont.	59.1	12	9	48 c
	Townsend-Brownsville, B. C.	1.9	1		4 c
GM&O	Iles-Girard, Ill.	23.5	4	10	12 c 10 a
	Oliver-Manchac, La.	15	2	5	6 c 8 a
IC	Bluford-Metropolis, Ill.	78.5	6 + 6 ss	5	25 c 57 a
	Chiles-Fulton, Ky.	41.3	2 + 3 ss	1	10 c 30 a
KCS	Stilwell-Sallisaw, Okla.	35.5	7	7	21 c 19 a
	Hicksville-Syosset, N. Y.	7	1	3	5 c
L&N	Beauvoir, Miss.-New Orleans, La.	70	12	22	36 c 26 a
	Black Creek-Nyota, Ala.	15	2	5	6 c 8 a
MeC	Bangor-Calais Jct., Me.	1.1	2		6 c 1 a
	Cleveland, O. (ABS)	0.7			1 ats
NYC	Toledo, O. (ABS)	1.9			4 ats
	Weehawken-Hoboken, N. J.	4	1		8 c 4 a

Interlocking Construction During 1961

Railroad	Location	Type	Switches	Signals
AT&SF	Chicago, Ill.	NF	1	3 h
	Galesburg, Ill.	RF	7	11 h
	Henrietta, Mo.	RF	2	10 h
	CA Junction	RF	8	6 h
	Sibley, Mo.	RF		4 h
	Lockney, Tex.	AA		4 h 4 d
	Plainview, Tex.	AA		4 h 4 d
	Daggett, Calif.	RC-F		
	San Bernardino, Calif.	CF		
	San Bernardino, Calif.	AM	2	2 h
ACL	Sanford, Fla.	RM		
	Five in Philadelphia, Pa.	NF	50	47 h
BGO	Boston, Mass.	RM	1	1 h
	South Acton, Mass.	AF		1 h 1 d
B&M	Nashua, N. H.	RA		1 h
	Niagara Falls, Ont.	RF		8 h 2 d
CNR	St. Hyacinthe, Que.	AF	1	3 h
	Montreal, Que.	RP	6	8 h
CPR	Edmonton, Alta.	AF	1	3 h
	LaMar, Mich.	RF	7	6 h
C&O	Pelton, Ont.	RF	5	9 h 1 d
	Chicago, Ill.	NF	4	6 h
CGNW	Oak Park, Ill.	NF	1	3 h
	Vale, Ill.	AF	2	1 h
CGWI	Rochelle, Ill.	AM		3 h
	Dearing, Ill.	CP	6	8 h
CB&Q	Oakdale, Ill.	CR-F	3	
	Omaha, Neb.	NA		10 h
CMStPGP	Chillicothe, Mo.	NA		5 h 4 d
	Rondout, Ill.	RF	5	
CTA	Ramsey, Minn.	AF	1	
	Chicago, Ill.	CF		
E-L	Wilson Ave.	AR-M	5	6 h
	Depew, N. Y.	NF	4	6 h
GN	West Alden, N. Y.	AF	1	2 d
	East Alden, N. Y.	NF	1	3 h 2 d
	Attica, N. Y.	NF	2	5 h 1 d
	East Linden, N. Y.	AF	1	2 d
	Rock Glen, N. Y.	NF	1	3 h 2 d
	Silver Springs, N. Y.	NF	2	4 h 2 d
	Calumet, Minn.	NA		4 h
	Girard, Ill.	RP	1	5 h 1 d
	North Litchfield, Ill.	RA		4 h
	Chicago, Ill.	RA		8 h
L&N	Nortonville, Ky.	RA		4 h
	East St. Louis, Ill.	RA		10 h 8 d
GM&O	N. Birmingham, Ala.	NA		10 h 5 d
	Wildwood (Wauhatchie), Tenn.	NF	3	5 h 5 d
MeC	Lockout (Wauhatchie), Tenn.	NF	2	4 h 4 d
	Brunswick, Me.	RA	1	3 h 3 d
MTA	Tower A, Boston	AM	2	1 h
	Copley Jct., Boston	AA	1	
MKT	Denison, Tex.	RA		6 h
	Sallisaw, Okla.	RA		
NYC	Croton, N. Y.	AM	2	
	Weehawken, N. J.	RF	4	9 h
MeC	Buffalo, N. Y.	RA		6 h
	Buffalo, N. Y.	CF		
NYC	Rensselaer, N. Y.	RF	4	6 h
	Rensselaer, N. Y.	RF	7	9 h
NYC	La Porte, Ind.	RF		6 h

SIGNALING INSTALLED IN 1961 continued

NGW	Danbury, Conn. - Poughkeepsie, N. Y.	48	8	3	ss	6	31	c	8	a
	Bedford-Montvale, Va.	10.8	2			8	6	c	2	a
	Fort Lewis-Whitethorne, Va.	36.2	6			6	20	c	13	a
	Norcross, Va. - Bluefield, W. Va.	32.7	15			8	26	c	21	a
	Lubeck-Chillicothe, O.	3.7	3			18	6	c		
	Pelton-Walton, Va.	7				1			1	a
	Eggleston-Pembroke, Va.	5.5	1				3	c		
NP	Wadena-Perham, Minn. (ABS)	20							21	a
PRR	Petersburg-Baree, Pa.	3.9							1	a
	W. Miiflin-Miiflin, Pa.	3.6					2	c	2	a
	Baltimore, Md.	1.1	1				3	c	1	a
	Indianapolis-Lebanon, Ind.	24.7	7			1	21	c	8	a
ONSGL			2			1	4	c		
SAL						1				
StL-SW						4				
SOO	Minneapolis-Buffalo, Minn.	37	11			17	26	c	11	a
SP	Lafayette, La. (ABS)	0.4							2	a
	Hearne-Tatsie, Tex. (ABS)	3.4							2	a
	Roseville-Lincoln, Calif.	9.8	2				10	c	6	a
	Eugene, Ore.	0.4	2			1	4	c		
	Mission Jct.-Aurant, Calif.	3	2				3	c	1	a
WABASH	Hardin-Camden, Mo.	13				5			4	a
WM	Baltimore-Hagerstown, Md. (ABS)	87							8	a

Totals	CTC road miles	1,744.4	Power-452	Auto. train stop 234	1,167 c	1,134 a
	CTC track miles	1,940.5	Spring-55	Elec. locks (CTC)		(806)
	ABS road miles	109.7	SS with	523		(328)
	ABS track miles	175.7	FP lock-11	(501 CTC)		(10 ABS)
				(12 other)		(ABS)

(ABS) = automatic block signals
 ss = spring switch
 ssl = spring switch with facing point lock
 ats = automatic train stop
 c = controlled signal
 a = automatic signal

NYCGStL	Graville, Ill.					4	h
NYCTA	Chappell, Ill.					5	h
	Ridge Farm, Ill.					5	h
	BMT-B'way 57th St.					7	h
	BMT-B'way 34th St.					3	h
	BMT-B'way City Hall					7	h
	BMT-B'way Whitehall					4	h
	BMT-CI Term.					3	h
	IRT-Lex. Grand Central					6	h
	IRT-Lex. Brooklyn Brdg.					11	h
	IRT-Lex. 86th St.					8	h
	IRT-Seventh 225th St.					4	h
	IRT-Brooklyn Flatbush Ave.					4	h
NGW	Williamson, W. Va.					4	h
PRR	Aspinwall, Pa.					1	h
	Englewood, Ill.					6	h
RDG	Birdsboro, Pa.					6	h
	Philadelphia, Pa.					6	h
	Perkasie, Pa.					6	h
	Elsmere, Del.					6	h
	Monocasy, Pa.					1	h
StL-SF	Holdenville, Okla.					3	h
	Birmingham, Ala.					6	h
	Demopolis, Ala. (bridge)					6	h
SOO	Chippewa Falls, Wis.					6	h
SOU	E. Durham, N. C.					6	h
	Hattiesburg, Miss.					1	h
SP	Houston, Tex.					5	h
	Tracy, Calif.					1	h
TRRStL	E. St. Louis, Ill.					40	h
	St. Louis					1	h
UP	Bonner Springs, Kan.					3	h
WAB	Hannibal, Mo.					2	h
	Springfield, Ill.					2	h
	Oakwood, Mich.					4	h
	Totals					275	h
						510	h
						94	d

Type:
 A = Addition
 C = Consolidated
 N = New
 R = Rebuilt
 A = Automatic
 F = Free Lever
 M = Mechanical
 P = Pushbutton (route)
 h = home signals
 d = distant (approach) signals

Dragging Equipment Detectors: 1961

AT&SF	2
CB&Q	9
GN	4
PRR	1
SOU	21
	<u>37</u>

Broken Flange Detectors: 1961

CB&Q	3
PRR	11
SOU	15

Spring Switches Installed: 1961

Railroad	Switches	Signals
ACL	1 fpl	—
BGO	6	6
BGM	4	5
CNR	2	3
CPR	2 fpl	2
CGO	2	2
CGNW	6 fpl	—
MP	2 fpl	—
MONON	1	1
NYC	2	5
	1 fpl	—
StL-SF	1	1
SAL	1 fpl	2
SOU	4	6
SP	13	7
	4 fpl	—
TGP	1	—
Total Spring Switches with F. P. Lock	53	40

Slide Fence: 1961

	feet
CNR	4,450
D&RGW	5,600
GN	685
L&N	225
NGW	1,450
NP	495
PGWV	200
SP&S	1,650
UP	1,200
WP	506
	<u>16,461</u>

Communications Facilities: 1961

Summary of Communications Installed, 1959-61

	1959	1960	1961
Miles of new or rebuilt pole line	4,574	4,092	6,350
Miles of new aluminum line wire	2,568	4,307	4,947
Miles of new copper line wire	<u>5,727</u>	<u>4,463</u>	<u>3,718</u>
Carrier equipment installed			
Terminals—Voice only	1,169	1,589	1,383
Speech plus telegraph	103	197	148
Telegraph only	968	1,100	1,517
Repeaters—Voice only	121	130	78
Speech plus telegraph	4	6	—
Telegraph only	7	8	22
Printing Telegraph equipment			
SO, RO, and SR machines	421	725	437
Reperforators	104	240	289
Automatic telephone exchanges	38	28	42
Stations available	3,050	5,585	1,040
Train Radio			
Mobile	2,090	2,803	1,367
Road base stations	129	452	214
Yard base stations	104	131	51
Walkie-talkies	905	1,525	463
Yard loudspeaker systems			
Talk-back speakers	726	677	690
Paging speakers	346	296	332
Intercom systems			
Telephones	72	131	66
Loudspeakers	619	326	409
Totals	<u>10,976</u>	<u>15,949</u>	<u>8,548</u>

Intercom Systems Installed in 1961

Railroad and Facility	Speakers and Phones
AT&SF	at 3 yards 23 tb 8 p at 2 frt hs 72 s at 2 ofcs 11 s at 1 shop 1 t
ACL	at 2 frt hs 57 s at 2 ofcs 48 s
B&O	at 2 ofcs 73 s
BAR	at 1 shop 30 s 14 t
CNR	at 5 yards 307 tb 201 p at 2 yards 6 s 8 t at 1 shop 30 s 14 t
CPR	at 1 yard 3 tb
CGO	at 4 yards 70 tb 3 p
CB&Q	at 1 frt hs 9 s at 2 shops 9 s
CMStP&P	at 3 yards 37 tb 7 p at 1 frt hs 4 s
CSS&SB	at 1 ofc 14 t
CTA	at 1 yard 6 tb
Clinchfield	at 1 shop 12 s
EJ&E	at 2 yards 2 tb 1 p
E-L	at 3 yards 27 tb
GN	at 2 yards 17 p
LSGI	at 1 yard 1 tb
L&HR	at 1 yard 3 p
LI	at 4 stations 19 s
L&N	at 1 yard 35 tb 20 p
MP	at 2 yards 21 tb 8 p
NYC	at 6 yards 107 tb 24 p at 1 frt hs 19 s 9 t
at 1 ofc 6 s	
NGW	at 1 yard 6 p
PRR	at 2 yards 14 tb 7 p at 1 shop 2 s
StL-SF	at 2 yards 1 tb 4 p
SOU	at 2 shops 6 t
at 1 frt hs 2 s	
SP	at 2 yards 35 tb 23 p
WAB	at 1 yard 1 tb

tb = talk-back speakers, 690
p = paging speakers, 332
s = intercom speakers, 409
t = intercom telephones, 66

Pole Line Construction Activity During 1961 on U. S. and Canadian Railroads

Railroad	Miles of New or Rebuilt Pole Line	Miles of New Wire Installed
AC&HB	40	
AT&SF	48	
ACL	358	
B&O	381	
BAR	46	
B&M	35	
CNR	883	96 ba, 4,451 ia 271 bhd, 4 ihd
CPR	200	1,370 bhd, 142 ACSR
CGO	288	2 bhd, 5*
CG&NW	250	350 bcs, 50 ics
CB&Q	139	
CMStP&P	275	100 ics
CR&P	130	
DGH	10	
DM&IR	13	21 ics
E-L	9	12 bhd
GN	—	866 ics
IC	14	258 ia
KCS	69	
LI	50	13 bhd
L&N	450	500 bhd
MP	603	
MONON	61	
NYC	2	
NYC&StL	112	
NP	215	

Railroad	Miles of New or Rebuilt Pole Line	Miles of New Wire Installed
PRR	191	32 bhd 54 ics
QNS&L	160	
RDC	26	
StL-SF	176	
SAL	339	61 ihd
SOU	73	12 bhd
SP	577	
UP	10	
WAB	37	
WM	20	
WP	60	
	<u>6,350</u>	<u>8,665</u>

ba = bare aluminum 96 miles
ia = insulated aluminum 4,709 miles
ACSR 142 miles
Total aluminum wire 4,947 miles

bhd = bare hard drawn copper 2,212 miles
ihd = insulated hard drawn copper 65 miles
bcs = bare copper-covered steel 350 miles
ics = insulated copper-covered steel 1,091 miles
Total copper wire 3,718 miles

* 6 and 11 pair #19 rural distribution wire.

Equipment Installed on U. S. and Canadian Railroads in 1961

(Continued from page 12)

	Carrier		Printing Telegraph	
	Terminals	Repeaters		
	4 t		4 T	
Telephone exchs., 100 lines)	19 v, 30 t	11 v	2 T	2 R
Microwave stations installed)				
	12 v	1 v	11 T	11 R
Telephone exchs., 77 lines total)	2 v, 10 s, 11 t	—	37 T	32 R
	6 v			
Telephone exchs., 375 lines total)	342 v, 504 MWv	—	228 T	148 R
Microwave stations installed)	726 t, 170 MWt	—	—	—
	62 v, 273 t	15 v, 22 t	—	—
Telephone exchs., 55 lines total)				
Microwave stations installed jointly with CNR)	8 v, 32 s, 76 t	2 v	—	—
	26 v, 8 s	4 v	—	—
	24 v	18 v	1 T	—
	14 v, 34 s, 24 t	3 v	15 T	22 R
	4 v, 6 s	2 v	5 T	11 R
Microwave stations installed)	24 v, 14 t	—	29 T	—
	10 v	—	—	—
	6 v, 2 s	1 v	8 T	6 R
Telephone exchs., 83 lines total)	12 v, 2 s	3 v	5 T	13 R
	6 v	—	—	—
	6 v, 6 s	—	—	—
	8 v, 2 t	—	37 T	18 R
Telephone exchs., 150 lines total)				
Microwave stations installed)	6 v, 4 MWv	3 MWv	—	—
	20 s	—	12 T	4 R
	6 v	—	—	—
	36 v, 4 s	3 v	5 T	3 R
	1 t	—	—	—
	22 v, 2 s	—	4 T	—
	2 v, 2 s	1 v	3 T	—
Microwave stations installed)	24 MWv	—	—	—
	41 v, 1 s, 14 t	9 v	9 T	1 R
(1 telephone exch., 200 lines total)				
Microwave stations installed)	90 v, 12 t	—	4 T	—
2 microwave stations installed)				
	2 v	—	—	—
	2 s, 2 t	—	1 T	2 R
	—	—	2 T	10 R
	6 v, 6 s, 8 t	—	—	—
	39 v, 9 s	1 v	4 T	1 R
	2 t	—	4 T	1 R
	2 s	—	3 T	4 R
	2 v	—	4 T	—
	8 v	1 v	—	—
	2,900	100	437 T	289 R

v = voice only
 s = speech plus telegraph
 t = telegraph only
 MW = microwave

T = teletypewriter machines, SO, RO and SR
 R = reperforators

voice terminals 386 teletypewriters RR owned
 s + t terminals 51 teletypewriters leased
 telegraph terminals 274 reperforators RR owned
 MW voice terminals 15 reperforators leased
 MW telegraph terminals 42 telephone exchanges (37 RR owned)
 MW voice repeaters with 1,040 available lines (705 in
 voice repeaters RR owned exchs.)
 telegraph repeaters 108 microwave stations

year. Public approval of the first bond issue for the Bay Area Rapid Transit District's San Francisco subway and elevated system is expected this year. BARTD plans to install a completely automatic passenger transit system with crewless trains.

As for the signaling outlook for this year, one signal officer summed it up this way: "I expect 1962 to be a better year than last. We have plenty of signaling to install and we've got the money to do the job."

Forty-three U.S. and Canadian railroads have budgeted \$31,175,370 (about 20% more than in 1961) for additions and betterments to their communications facilities during 1962. Top items on the '62 shopping list are microwave and railroad radio. According to the latest information received in a *Railway Signaling and Communications* survey, spending in 1962 compared to last year shapes up this way: 19 railroads plan to spend more money for communications in 1962. Their capital budgets total \$15,282,800. The 18 roads planning to spend the same as last year indicated budget figures totaling \$14,607,170. Those 15 roads planning to spend less in 1962 than in 1961, listed a total of \$1,285,400 for capital expenditures.

Bulk handling of data receives top attention on six roads that plan to install microwave systems. While two roads give no mileage figures, four others report an intent to install 1,740 mile of microwave. The prime function, the roads report, is to handle data transmission and increase their direct distance dialing systems for better telephone service. While only 10 railroads stated specifically that they would add carrier equipment to their existing data and telephone systems, the majority of the 49 roads reporting indicated that general expansions would be made to their communications plants.

Interest in this bulk communications area was indicated by American Telephone & Telegraph Co., which introduced its Telpak tariff hoping to compete with private microwave systems. In recent testimony at the Federal Communications Commission's investigation of the Telpak tariff, AT&T Vice-President John J. Scanlon made these comments as to the question of a realistic choice between common carrier [telephone company] service and a private microwave system:

"It must be observed that Telpak is a common carrier service offering, with uniform rates for all. As such, it can't parallel in all respects the features of a privately provided micro-

(Please turn to page 18)

Train & Yard Radio Installed During 1961

Railroad	Mobile	Base	Walkie-talkie
ALASKA	1 MW	9 R	15
AGS	1 A	—	—
AT&SF	171 L, 25 C, 31 MW, 44 A	30 R, 2 Y	78
ACL	24 C, 4 A	3 R, 3 Y	36
B&O	8 L, 3 MW	2 R, 1 Y	14
B&M	4 L, 7 MW, 2 A, 5 T	7 R, 2 Y	2
CNR	20 L	3 R	—
CPR	32 L, 5 A	—	—
CofGa	6 MW, 1 A	1 R	—
CNJ	11 L, 2 MW, 2 A	3 R	—
C&O	—	1 R	—
CGIM	2 L, 7 C	—	2
CGNW	68 L, 25 C	3 Y	27
CGWI	—	—	2
CB&Q	88 L, 15 C	—	5
CMS&PGP	10 A	1 Y	—
CRIGP	5 L	4 R	—
CSS&SB	2 A	—	—
CTA	2 L, 30 L*	1 R*	—
Clinchfield	8 MW, 8 T	—	—
D&RGW	4 L, 28 C, 6 A	1 R	—
DM&IR	3 MW, 1 A	1 R	—
EJ&E	8 L, 3 A, 17 T	4 Y	34
E-L	4 L, 23 MW	2 R	—
FEC	10 A	17 R	—
G&F	11 L, 4 C	13 R	10
GN	14 C, 2 MW, 3 A	5 R	10
GB&W	2 A	—	—
GM&O	1 L	3 R	6
IC	3 A	—	4
IT	2 L	—	—
KCS	—	2 R	—
KO&G	1 MW	—	—
LS&I	2 A	—	—
L&N	8 L, 1 A	3 Y	15
MKT	7 L, 11 C	3 R	—
NYC	24 L, 17 C, 5 MW, 4 A	5 R, 8 Y	129
PGLE	40 L	2 R	—
NG&W	—	3 Y	17
NP	43 L, 6 C, 1 A	8 R	4
PRR	15 L, 3 A	6 R, 4 Y, 1 R*	12
RDG	2 MW, 3 A	2 R	—
StL-SF	5 A	3 Y	8
SAL	50 L, 5 A	31 R	—
SOU	1 A	18 R, 3 Y	3
SP	14 L, 5 C, 85 MW, 69 A, 48 T	26 R, 4 Y	15
SPS	5 C	—	—
T&P	—	2 R	—
UNION	35 L	5 Y	7
UP	11 A	2 Y	8
WM	10 L, 1 A	—	—
WP	2 A	2 R	—
Totals	1,367	265	463

* Inductive carrier.

L = Locomotives, 687 space radio
30 inductive carrier

C = Caboose, 186

MW = Maintenance of way equipment, 179

A = Automobiles, 207

T = Trucks, 78

R = Road base stations, 212 space radio
2 inductive carrier

Y = Yard base stations, 51

(Continued from page 17)

wave system. The latter essentially represents the provision of physical facilities with which generally comparable communications functions may be performed.

"The cost of private microwave systems turns heavily on the circumstances of each individual user's needs. The choice by an individual user between Telpak and a privately provided system is likely to turn, therefore, on his individual appraisal of a great many considerations.

"But as far as cost alone is concerned, however, it is obvious that since the common carrier offering must be designed to meet average conditions, there will be an economic bias in favor of private microwave in those instances where conditions of terrain, the availability of customer-owned buildings for antenna sites, the possibility of employing existing personnel for the operation of a private system, etc., tend to make the private system appear the less costly."

Railroad radio receives prime attention from several roads faced with the Federal Communications Commission's November 1, 1963, deadline for operation of split-channel or narrow band radio. Several of the 21 roads reporting, said that major radio replacement programs are budgeted for this year. While radio equipment purchased during the last three to five years will operate on the narrow band required by the FCC or can easily be converted, many railroads have older equipment which cannot be converted. All radios that can't be converted must be replaced with new narrow band equipment. Several roads must replace multi-hundreds of radios before the FCC's 1963 deadline. At this early date, the survey results show only 277 radio purchases in 1962 budgeted.

Survey returns covering other communications facilities such as pole lines, telephone exchanges and loud speaker systems are too sketchy to be of much value. However, most reporting roads indicated that pole line reconstruction would continue at about previous levels of activity. A few roads reported cable plant replacements, but no specific information was presented.

Most replies indicated that budget items would be fulfilled. One communications officer said: "We'll be busier than ever in the coming year. Another reported that a significant rise in carloadings on his road would "let us cut down the backlog of budget items that have fallen under the 1963 economy axe." One man expressed the opinion that the reduction in capital expenditures on his road would enable him to work off some deferred maintenance, especially on his pole lines. RS