Signal systems in service as of January 1, 1962

Type of signal protection	Plants	Miles of—		Locomotives
		Road	Track	
Block-signal systems:				
Automatic		81,375.1	107,562.6	
Nonautomatic		23,165.7	23,614.1	
Total		104,540.8	131,176.7	
Corresponding totals, Jan. 1, 1961		105,330.5	132,985.5	
Interlocking	3,939			
Automatic train-stop, train-control, and cab-signal devices:				
Train-stop		9,379.1	14,345.0	4,750
Train-control		1,016.0	1,944.9	1,128
Cab-signal		3,763.6	8,222.0	3,556
Total	3,939	14,158.7	24,511.9	9,434
Corresponding totals, Jan. 1, 1961	4,028	14,173.0	24,908.2	9,324

Bureau of Safety inspections made during the year ended June 30, 1962

System	Number of systems inspected	Including inspections of—				
		Signals	Switches	Other appliances	Devices on locomotives	Records of tests
Automatic block-signal	846	9,069	7,239	1,071		40,183
Interlockings	1,931	14,891	10,067	10,566		31,735
Traffic-control	912	8,183	5,160	5,072		25,156
Automatic train-control	34			144	84	90
Automatic train-stop	472			2,101	1,882	6,439
Automatic cab-signal	312			777	1,452	4,166
Total	4,507	32,143	22,466	19,731	3,418	107,769

Accidents at highway grade crossings for the year ended December 31,

Accidents and casualties	1959			1960			1961		
	Number	Number of persons		Number	Number of persons		Number	Number of persons	
		Killed	Injured		Killed	Injured		Killed	Injured
Accidents at highway grade crossings	3,075	1,203	3,247	3,195	1,364	3,424	3,204	1,291	3,514
Accidents at highway grade crossings involving motor vehicles [1]	2,815	1,055	3,123	2,966	1,254	3,277	2,914	1,168	3,288
Derailments of trains at highway grade crossing involving motor vehicles	61	30	108	70	48	161	54	25	182
Miscellaneous train accidents as a result of collisions between trains and motor vehicles	94	68	71	92	77	94	164	96	89
Railroad casualties:									
Passengers			46		14	129		1	154
Employees on duty		2	83		11	86		9	133
Total		2	129		25	215		10	287

[1] Passenger automobiles, buses, and trucks.

Train communications (Jan. 1, 1962): line of road (top), yard (below)

Type of installation	Miles of road	Wayside stations	Locomotives	Cabooses and other mobile	Portable pack sets
Radio	129,887	1,870	10,220	6,573	6,188
Inductive	6,544	243	1,105	349	1
Combination inductive and wire intercommunication	86	1		2	
Commercial radio service used in railroad operation	247	3	13	21	
Total	136,764	2,117	11,338	6,945	6,189

Type of installation	Number of installations	Wayside stations	Locomotives	Cabooses and other mobile	Portable pack sets
Radio	962	1,331	3,282	1,060	2,049
Inductive	5	5	22		
Commercial leased radio service	28	16	178		
Total	995	1,352	3,482	1,060	2,049

ICC Reports On Signalin

Signal failures showed an increase for the year ended June 30, 1962 as compared to the previous year, according to the recently issued report of the Section of Railroad Safety, Bureau of Safety and Service, ICC. False restrictive failures totaled 27,047 (June 30, 1962), a gain of 3,163 over the previous year. False proceed failures jumped from 56 to 72, according to the Commission's report, but potential false proceed conditions declined from 7 to 3. Details of these figures as applied to the individual railroads is presented on the opposite page.

During the year, 232 applications for approval of modifications of block-signal systems and interlockings were filed by railroads. At the beginning of the year 51 applications were pending. The Bureau acted upon 237 applications and left 46 pending.

Seventeen applications were filed during the year in connection with the RS&I prescribed by the ICC's order of June 29, 1950. With two applications pending, the Bureau acted upon 13 applications during the year. Six applications were pending at year end. Public hearings were held during the year on six applications for relief from the RS&I. The decrease in the number of applications filed for relief (17 in the year ended June 30, 1962 as compared to the previous year's 55) was largely brought about by the revision of Section 136.410 (electric locks for hand-operated switches in main tracks) of the RS&I by the Commission's order of April 3, 1961, in Ex Parte No. 171.

The 4,507 signal systems inspected represented a decrease of 53 systems inspected under the previous year. This is partly due to the fact that several inspectors' territories were vacant a month or more during the past year due to illness or retirements. However, a large number of unsatisfactory maintenance conditions on the railroads were corrected during the year because of these inspections.

In the year ended June 30, 1962, 29

Name of railroad	False restrictive failures					False proceed failures					Potential false proceed conditions				
	Block systems	Interlocking	ATS-ATC ACS	Other systems	Total	Block systems	Interlocking	ATS-ATC ACS	Other systems	Total	Block systems	Interlocking	ATS-ATC ACS	Other systems	Total
Alabama Great Southern	79	46	15	22	162	1				1					
Alton & Southern	8	25			33										
Ann Arbor	3				3										
Arkansas & Memphis Ry. Bridge & Term. Co.		3			3										
Atchison, Topeka & Santa Fe	428	568	292		1,288	5	1	2		8					
Atlanta & West Point	56				56										
Atlanta Terminal		18			18										
Atlantic Coast Line	242	289	82	12	625										
Baltimore and Ohio	420	251	46		717										
Baltimore and Ohio Chicago Terminal	13	86			99										
Bangor & Aroostook	73			47	120	1				1					
Belt Railway of Chicago	2	27			29										
Bessemer & Lake Erie	39				39										
Birmingham Terminal		31			31										
Boston & Maine	89	134	3		226	1	1			2					
Boston Terminal		33			33										
Butte, Anaconda & Pacific	35				35										
Canadian National		4			4										
Central of Georgia	122	4			126	1				1					
Central R.R. of New Jersey	69	133			202		1			1					
Central Vermont	1				1										
Chesapeake & Ohio	274	163	19	1	457										
Chicago & Eastern Illinois	101	179	2		282										
Chicago & Illinois Midland	37	13			50										
Chicago & North Western	590	261	289		1,140	3		1		4					
Chicago & Western Indiana	8	58			66										
Chicago, Burlington & Quincy	540	17	10	2	569	6	1			7					
Chicago Great Western	177	22			199										
Chicago, Milwaukee, St. Paul & Pacific	459	101	114		674	3				3	1				1
Chicago North Shore & Milwaukee	51	39			90										
Chicago, Rock Island & Pacific	544	139	6		689	1				1					
Chicago South Shore & South Bend	73	6			79	1				1					
Chicago Union Station		10			10										
Cincinnati, New Orleans & Texas Pacific	23	73	13	3	112										
Cincinnati Union Terminal		154			154										
City of St. Louis Municipal Bridge		36			36										
Clinchfield	53				53										
Colorado & Southern	11	1			12										
Dayton Union		40			40										
Delaware & Hudson	130	74			204										
Denver & Rio Grande Western	345	17			362		1			1					
Denver Union Terminal		35			35		1			1					
Detroit & Toledo Shore Line	3				3										
Detroit, Toledo & Ironton	1	4	1		6										
Duluth, Missabe & Iron Range	13	11	2	3	29										
Elgin, Joliet & Eastern	25	85			110										
Erie-Lackawanna	270	140	96	13	519	2				2					
Florida East Coast	195				195										
Fort Dodge, Des Moines & Southern		4			4										
Fort Worth & Denver	49	1			50										
Georgia	102				102										
Georgia Southern & Florida	41	2	10	8	61	1				1					
Grand Trunk Western	130	57			187										
Great Northern	462	48			510										
Green Bay & Western	11	2		6	19										
Gulf, Mobile & Ohio	139	49	8		196										
Houston Belt & Terminal	8	39			47										
Hudson & Manhattan	101	118	165		384										
Illinois Central	328	25	88		441	5				5					
Illinois Terminal		10			10										
Indianapolis Union		18			18										
International Ry. Co. of Maine	11				11										
Jacksonville Terminal	2	148			150										
Kansas City Southern	191	184			375										
Kansas City Terminal		408			408										
Kentucky & Indiana Terminal		31			31										
Lake Superior & Ishpeming		14	3		17										
Lehigh & Hudson River	12				12										
Lehigh Valley	73	5			78										
Long Island	43	61	462		566										
Los Angeles Union Passenger Terminal		16	1		17										
Louisville & Nashville	745	86	175		1,006										
Maine Central	52	5		2	59										
Memphis Union Station		91			91										
Missouri-Kansas-Texas	392	25		2	419										
Missouri Pacific	484	112			596										
Monon	110	13			123	1				1					
Monongahela	13				13										
New Jersey & New York	3				3										
New Orleans & Northeastern	23	2	14		39										
New Orleans Public Belt	3				3										
New Orleans Union Passenger Terminal		14			14										
New York Central	583	650	289		1,522	1				1					
New York, Chicago & St. Louis	129	252	21		286										
New York, New Haven & Hartford	90	149	10	37	7										
New York, Susquehanna & Western	6	1			7										
Norfolk & Western	134	245			379										
Northern Pacific	785	36			821	2				2					
Pacific Electric	34	44			78										
Pennsylvania	476	1,016	1,104	6	2,602		1	10	5	10	1				1
Pennsylvania-Reading Seashore Line	28	21	3		52			2	1	2					
Peoria & Pekin Union	8	25			33										
Pittsburgh & West Virginia	26				26										
Portland Terminal	10	2			12										
Reading	49	82	3		134										
Richmond, Fredericksburg & Potomac	15	37	9		61										
River Terminal		88			88										
Sacramento Northern	1				1										
St. Louis-San Francisco	342	17			359	2				2		1			1
St. Louis Southwestern	109				109										
Seaboard Air Line	351	29			380										
Soo Line	232	48			280										
Southern	470	116	114	24	724										
Southern Illinois & Missouri Bridge	4				4										
Southern Pacific	575	39	8	1	623	3	1			4					
Spokane, Portland & Seattle	71	6			77										
Terminal R.R. Assn. of St. Louis	1	301			302										
Texas and New Orleans	72	12			84										
Texas & Pacific	102	5			107										
Toledo, Peoria & Western		25		1	26										
Union	1				1										
Union Pacific	421	14	19		454										
Utah	1				1										
Wabash	193	39			232										
Washington Terminal		194			194										
Western Maryland	45	18			63										
Western Pacific	386				386	1				1					
Western Railway of Alabama	52				52	2				2					
Total	14,932	8,429	3,496	190	27,047	43	8	8	6	65	2	1	0	0	3

complaints were received in connection with alleged violations of the Commission's rules, standards and instructions. At the beginning of the year action was pending on five complaints previously filed. During the year investigations were completed on 28, and action was pending on six at the end of the year.

According to reports submitted by the carriers, as of January 1, 1962, train communication systems were in service for operation over a total of 136,764 miles of road on the line of 133 railroads. In addition to radio and inductive installations these systems included a combined inductive and wire intercommunication system operating over 86 miles of road. Also included were installations providing service through commercial telephone company facilities, operating over 247 miles of road.

Considering only radio and inductive systems used in connection with railroad operation, such systems were in service on 136,431 miles of road on 132 railroads. This compares with radio and inductive communication syst in service on 139,152 miles of road 131 railroads as of January 1, 19 The reduction in the number of m of road on which radio and inducti communication systems were in use w due to the abandonment of certa branch lines on which these syste were in operation.

There were 995 installations in se ice in yards and terminals on 1 railroads. This compares with 957 i stallations in service on 137 railroa as of January 1, 1961. The reducti in the number of railroads using ya and terminal installations was due several railroads discontinuing ope tions during the year and the merg of other railroads.

G. B. Anderson, assistant chief, se tion of railroad safety, ICC's Bure of Safety, commented: "During t fiscal year ending June 30, 1939, t first full year after passage of the Sign Inspection Act, there were 38,123 fa restrictive failures of all types of sign devices on the railroads of the U. During the fiscal year ended June 3 1961, there were 23,884 such failur a reduction of 37%." [June 30, 19 figure was 27,047, a 26% reduction

"During the fiscal year ending Ju 30, 1961, there were 56 false proce failures while during the same peri there were only 7 potential false pr ceed conditions." [June 30, 1962 fi ures are 72 false proceed failures a only 3 potential false proceed cond tions.]

"These compare to a total of 2 false proceed failures and 53 potenti false proceed conditions reported du ing the year ending June 30, 193 Accordingly there has been a reducti of almost 79% in the number of fa proceed failures [72% by the end June 30, 1962] and of 87% in t number of potential false proceed co ditions [94% by the end of June 3 1962] since the Signal Inspection A has been in effect."

Concluding his remarks on sig maintenance and the Act, Mr. Anders said: "I do not wish to leave the i pression that enforcement of the Sign Inspection Act by the Commission h been responsible for this remarkab improvement, when there are so ma other factors that have played more i portant parts toward the achieveme of this impressive record. Technologic advancement in the art of railw signaling has contributed in no sm degree to reducing the number failures. But these factors alone cou not have produced these gratifying r sults if the quality of maintenance a forded by the signal departments the railroads had not kept pace wi technical developments."

Causes of potential false-proceed conditions, year ended June 30, 1962

Name of railroad	Sand, rust, or other deposit on rails	Failure of relays and similar devices	Circuits open, crossed, or grounded, foreign current et cetera	Apparatus broken, defective, or out of adjustment	Failure of apparatus due to ice, sleet, snow, wet track, weather, or lightning	Failure of apparatus due to obstruction	Errors in making connections or adjustments	Undetermined	Total
Chicago, Milwaukee, St. Paul & Pacific				1					1
Pennsylvania				1					1
St. Louis-San Francisco			1						1
Total	0	0	1	2	0	0	0	0	3

Causes of false proceed failures, year ended June 30, 1962

Name of railroad	Sand, rust, or other deposit on rails	Failure of relays and similar devices	Circuits open, crossed, or grounded, foreign current, et cetera	Apparatus broken, defective, or out of adjustment	Failure of apparatus due to ice, sleet, snow, wet track, weather, or lightning	Failure of apparatus due to obstruction	Errors in making connections or adjustments	Undetermined	Total
Alabama Great Southern				1					1
Atchison, Topeka & Santa Fe		1	3		3		1		8
Bangor & Aroostook							1		1
Boston & Maine			1				1		2
Central of Georgia					1				1
Central R. R. of New Jersey					1				1
Chicago and North Western			2	1			1		4
Chicago, Burlington & Quincy		1		1	1	1	3		7
Chicago, Milwaukee, St. Paul & Pacific			2	1					3
Chicago, Rock Island & Pacific							1		1
Chicago, South Shore & South Bend		1							1
Denver & Rio Grande Western			1						1
Denver Union Terminal							1		1
Erie-Lackawanna				1	1				2
Georgia Southern & Florida			1						1
Illinois Central		2	1				2		5
Monon					1				1
New York Central							1		1
Northern Pacific				1				1	2
Pennsylvania				4				1	5
Pennsylvania-Reading Seashore Lines							1		1
St. Louis-San Francisco					2				2
Southern Pacific		2	2						4
Western Pacific					1				1
Western Railway of Alabama		1						1	2
Total	0	8	13	10	11	1	13	3	59